

SEPTEMBER 20, 1951

IRON AGE

VOL. 168 NO. 12

THE IRON AGE
Editorial, Advertising and Circulation
Offices, 100 E. 42nd St., N. Y. 17, N. Y.

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National Business Publications

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DIGEST

of the week in metalworking

HOW BIG CAN ALUMINUM PRODUCTION GET?

PAGE 71
Puzzle in aluminum's future is how big production and use will get. Despite large gains in output, shortages still cling. Lion's share of demand comes from rearmament—but civilian users may need much more in the future. The metal is seizing more applications. Auto engines are a new field.

STEEL OUTPUT LOST IN BONUS RATE STRIKES

PAGE 73
A series of strikes and slowdowns has cost thousands of tons of steel output. They point to an urgent need for an understanding between workers and management on what constitutes a fair day's work before incentive rates begin. The union and a large producer are reported near settlement.

NEED FOR BEARINGS CHALLENGES CAPACITY

PAGE 75
Defense demand for bearings has grown to a point which challenges ability of manufacturers to produce. A lack of machine tools has stymied expansion plans. Even if this shortage were solved the field may trip into a second pitfall, short supplies of steel. Nickel cutbacks also are a problem.

WILL SUPER PRIORITIES SCUTTLE CMP?

PAGE 78
Foundation for a future system of preference ratings instead of the single band DO method was a little more solid last week, NPA established the new DX priority rating. This could be the first step in undermining CMP. If the DX priorities spread wildly CMP may have to be ruled a failure.

RFC TO "OPERATE IN GOLDFISH BOWL"

PAGE 88
Government lending for defense expansion is headed for a further tightening up. RFC is quietly putting a new get-tough policy into effect under its chief, W. Stuart Symington. He said RFC would "operate in a goldfish bowl" and warns that political influence will be routed out of policy.

DEFENSE ORDERS NEEDED TO DODGE LAYOFFS

PAGE 94
GM Chief C. E. Wilson said last week that his firm must get more defense contracts to avoid mass layoffs. This is contrary to a popular idea that auto plants are jammed with war work. Mr. Wilson said defense work is growing but slowly. Less than 10 pct of GM volume is for defense.

PLANE BUILDING BOOMS ON WEST COAST

PAGE 99
Defense orders force plant and payroll expansion to fill aircraft needs. Kaiser is very active, with steel plant showing good earnings. Metals shortage for the area looms. Some firms must close down if the government doesn't designate customers. More subcontractors and tools needed.

CONTINUOUSLY-CAST STEEL NEARS REALITY

PAGE 113
Continuous casting of steel on a commercial scale is nearing reality. The only major problem remaining is a sufficient supply of molten metal to the machine. Continuously-cast slabs and rounds are now being used in conventional rolling mills. Both carbon and stainless steels are cast.

HOW TO GET THE MOST FROM YOUR LATHES

PAGE 120
Many special chucks, such as one for turning ellipses, are available to increase lathe versatility. Air-operated and magnetic chucks have their advantages. Lathes can be made automatic through addition of duplicating equipment. Other special devices can aid in utilization of boring bars.

STEAM TREATMENT LENGTHENS H-S TOOL LIFE

PAGE 126
Steam in a furnace at 1025°F produces a tightly adherent, hard oxide on cutters, drills, hobs and other tools. The oxide delays loading which causes premature dullness. Number of pieces per grind has been increased more than four in some cases. Less down-time for regrinding has cut costs.

STEEL CONSUMERS HIT BY IMBALANCE IN CMP

PAGE 153
Manufacturers who couldn't get CMP tickets honored now find inventory imbalance is wrecking production schedules. This is a strong motive in plans of some to stay in conversion as long as possible. Some are nibbling in the gray market again in an effort to keep from cutting down production.

IMPACT EXTRUDE MAGNESIUM SUCCESSFULLY

NEXT WEEK
Magnesium is being successfully impact extruded by Dow Chemical Co. Present use is mainly for dry cell cases, but many other uses are expected to be found. Light, rigid, oil and chemical resistant magnesium can be impact extruded in round, oblong, or rectangular shapes with ribs, flanges.

Performance data, based on production experience, available upon request from authorized firms or individuals for heat treating any of the following items:

NEUTRAL HARDENING

- ☐ AIRCRAFT landing gears ☐ propeller gears ☐ propeller hub parts ☐ struts ☐ drag links ☐ piston rings ☐ engine parts ☐ supercharger parts ☐ engine cylinder liners, etc.
- ☐ TANK piston rings ☐ cylinder liners ☐ engine exhaust valves ☐ engine cam shafts ☐ gears, etc.
- ☐ Armor piercing shot and caps
- ☐ Armor plate ☐ Land mine parts
- ☐ Jet engine bearing races

DRAWING

- ☐ AIRCRAFT gas turbine gears ☐ landing gears ☐ piston engine parts ☐ supercharger parts, etc.
- ☐ Armored vehicle gears & pinions
- ☐ Armor piercing shot
- ☐ Tank torque converter parts
- ☐ Land mine parts
- ☐ Shells (cold extruded) ☐ cold drawn
- ☐ Tank tread pins

SOLUTION HEAT TREATMENT OF ALUMINUM

- ☐ Sheets and stampings ☐ airframe parts ☐ rivets ☐ plane rudders ☐ engine cowls ☐ helmets

ANNEALING

- ☐ Shells—cold extruded or cold drawn
- ☐ Cartridge cases—brass or steel
- ☐ Copper rotating bands
- ☐ Jet engine compressor parts ☐ silver lined bearings, etc.
- ☐ Aircraft engine connecting rods

AUSTEMPERING

- ☐ 3.5" bazooka motor bodies
- ☐ Rocket motor bodies
- ☐ Automatic pistol parts
- ☐ Base detonator fuses
- ☐ Bomb nose fuses
- ☐ Aircraft & tank piston rings
- ☐ Bomber plane brake shoes
- ☐ Spring clips

CYCLIC ANNEALING

- ☐ 3.5" bazooka motor bodies
- ☐ Shells (hot forged)

CARBURIZING

- ☐ Aircraft gas turbine gears
- ☐ Tank bogie wheel parts
- ☐ Tank engine gears
- ☐ Aircraft piston engine parts
- ☐ Aircraft camera parts
- ☐ Armor plate
- ☐ Gun breech block parts

MARTEMPERING

- ☐ 20-mm machine gun parts
- ☐ 40-mm Bofors gun parts
- ☐ Tank engine camshafts ☐ engine gears ☐ armor plate ☐ torque converter parts ☐ tread pins, etc.
- ☐ Aircraft gas turbine gears ☐ clutch rings
- ☐ Armor piercing shot
- ☐ Rocket fuse bodies

HEATING FOR FORGING

- ☐ 3.5" bazooka motor bodies
- ☐ Shells (hot nosing)

DESCALING

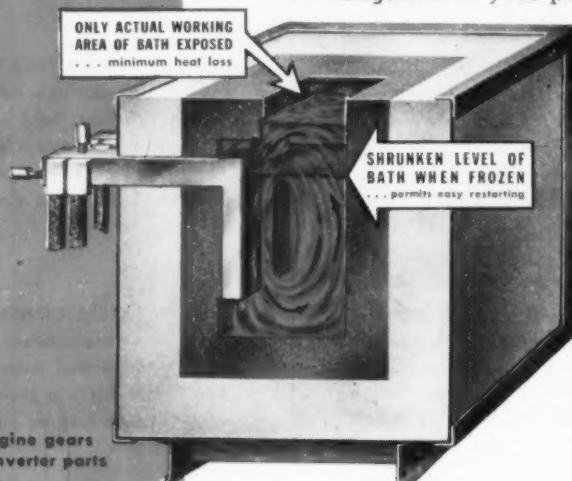
- ☐ Aircraft gas turbine buckets
- ☐ Stainless aircraft engine parts
- ☐ Inconel aircraft engine parts

Check

YOUR HEAT TREATING PROBLEM
FOR NATIONAL DEFENSE

... AJAX Has the Answers!

4 out of 5 metal products for defense use can be heat treated better, faster, with less floor space and at lower cost with an Ajax Salt Bath Furnace than by any other method! This statement is proved by the widespread use of Ajax furnaces during World War II and by the even more marked trend toward this exclusive salt bath method in today's rearmament program. And we'll be glad to prove it *specifically* by heat treating specimen batches of your materials under actual shop conditions in the Ajax Metallurgical Service Laboratory. There is no obligation on your part. You be the judge!



Ajax Submerged Electrode Furnaces*, equipped with refractory pots, reduce maintenance costs to the vanishing point because pot and electrode life is measured in years.

*Patented in U.S. and foreign countries.

Over 3,000 installations—more than all other electric salt baths combined.

See us at the Metal Show — Booth F-421

AJAX ELECTRIC COMPANY, INC.

World's largest manufacturer of electric heat treating furnaces exclusively

904 Frankford Avenue, Philadelphia 23, Pa.

IN CANADA: GENERAL ELECTRIC CO., LTD., TORONTO, ONT.



AJAX

ELECTRIC SALT BATH FURNACES

Long Live The King!

DEFENSE Mobilizer Wilson turned a nice phrase in his talk last week warning the nation of the extreme seriousness of the scrap supply situation. "Steel is still king," he said, "and scrap is the crown prince."

"Get that damn scrap—use ways you never used before," he told a Washington meeting of 600 scrap dealers and others interested in increasing the flow of scrap to steel mills and foundries.

Now the men who buy scrap for their furnaces and the men who gather it, prepare it and sell it to them know better than anyone else how important it is to keep scrap moving to the mills and foundries. Since this is still a free capitalist country they'll do their damndest (as Mr. Wilson asked) to find, move and melt every ton they can.

While these men whose business it is to buy and sell scrap will do their part of the job they need help. They need more cooperation from people who have antiquated equipment and assorted junk lying around their plants and over in the far corner of the grounds.

The amount of scrap recovered from industry is going to have a very real effect on the amount of steel a lot of these plants receive in the future. If steel operations are cut back this winter because of a scrap shortage—and at the present rate of scrap collection they are going to be—many of these steel users will pay for it in lost production.

Too many plant executives take the job of hunting up this scrap like they do their voting: "Oh, my one vote won't count." Fortunately, millions of Americans know that their one vote does count.

There are three more factors worth looking into: (1) It might pay the armed forces to make a top-level check on their dumps and warehouses to rout out rusted and unserviceable equipment; (2) ways have been found to move substantial tonnages from automobile graveyards—wider use might be made of them; and (3) government inventory and allocation rules should be revised so as not to penalize the steelmaker who is willing to take in very low grade scrap to stretch his supply.

The king is still healthy but the crown prince needs a quick transfusion.

Tom Campbell
Editor

Here's what metal working management will want to know about Microcarb Control

NOTHING else can do what Microcarb does in controlling the carburization of steel parts. Gears, shafts, cams, bearings and all the other items which owe some of their high quality and low cost to the carburizing process can now be made even better—and possibly at even lower cost.

The cause of such improvement is simply that Microcarb measures directly the carburizing "strength" of the furnace gases which supply carbon to the work being processed.

Heretofore many carburizing equipments have measured the amount of carbonaceous material fed into the furnace, but none has **directly** measured the active carbon in the hot furnace gas. For a comparison, think of heating your home by putting fuel in the furnace, without a thermometer to tell the temperature. Keeping your home at the same temperature day in and day out would then be an art rather than a science; some one person's judgment would have to be accepted, but there'd be no check. The comparable condition has heretofore been quite common in carburizing operations, everywhere.

Microcarb ends that uncertainty; it measures and controls carbon directly. Heat-treaters simply set the Microcarb Controller at 90 if they wish to carburize to ninety carbon. "The carbon you set is the carbon you get".

The "reason why" for Microcarb is its carbon de-

tecting element. This invention, called a Carbohm, is an engineering rarity—a truly new device for sensing a change in its surroundings.

Basically, a Carbohm is a wire, made of an alloy which will either absorb carbon from the furnace atmosphere, or lose it to the atmosphere, until it and the atmosphere are in equilibrium, carbon-wise.

With every change in the wire's carbon content, there's a corresponding change in its electrical resistance. The two Microcarb instruments—Controller and Carbon Recorder—translate this resistance directly into terms of percent carbon, control on that basis and record the result.

Only Homocarb carburizing equipment of our new Series H can be used with Microcarb, because the furnace and its temperature control must be designed to meet the needs of atmosphere regulation. Specific features are a soundly designed electric furnace with solid-bottom retort, improved fan housing and work support, and aerodynamically designed discharge jets. Micromax temperature control of the Duration-Adjusting Type is included.

Microcarb is many things to many men, especially in defense work.

To top management, Microcarb means better competitive position (for the individual company) quality-wise and possibly cost-wise. Also, it meets the usual desire for process control which is fully automatic.

To production executives, Microcarb means closer following of production schedules, because carburizing speeds and results are definitely more predictable than ever before.

To personnel executives, Microcarb means cleaner, more attractive working conditions. And, if the heat-treat uses incentive pay, Microcarb helps heat-treaters increase their earnings, because it makes

it easier for them to apply their skill and therefore increase their productivity.

To metallurgists, Microcarb means some or all of the above advantages, plus a tightening of technique such as every technician likes. "New" or hard-to-handle steels hold fewer puzzles. Standard steels emerge with closer specifications. The heat-treat takes another long step toward becoming a manufacturing laboratory.

Let us send you further facts about this new Microcarb Control. Ask our nearest office, or 4956 Stenton Ave., Phila. 44, Pa.



Dear Editor:

The Good Word

Sir:

My hearty approval and commendation of and for the editorial "The Good Word" in your Sept. 6 issue.

I've tried "it" many, many times over the years—past and present. I have always found that commendation given in the right way at the right time beats condemnation all to pieces. If you are forced to condemn—then shoot the so and so and get it over with.

H. A. ROEMER
Chairman

Sharon Steel Corp.
Sharon, Pa.

Good Results

Sir:

I just thought you might be pleased to hear that, as a result of the short article you printed on p. 111 of your Aug. 16 issue concerning the electro-deposition of aluminum technique, we have so far received 16 inquiries.

I am amazed, but very thankful.

D. ABBOTT
Director—Special Projects Div.

Institute of Inventive Research
San Antonio, Tex.

Curable

Sir:

The article "18-8 Can Be Cured After Intergranular Attack" by R. N. Gillmor, published in your Aug. 2 issue, caused considerable interest among our metallurgists. The article states that the cure can be accomplished by holding the material for long periods of time in the sensitizing temperature range.

This phenomenon was observed in our laboratory as early as 1933. In fact, on July 22, 1933, Mr. George C. Kiefer, our associate director of research, applied for a patent on this technique. The application was granted on June 17, 1941, patent number 2,246,445, entitled "Stabilization of Austenitic Chromium Nickel Steels."

L. KELLEY
Manager—Public Relations Dept.
Allegheny Ludlum Steel Corp.
Pittsburgh

Hazelett Process

Sir:

The articles "Continuous Cast Aluminum Bars Produced By The Properzi Process" appearing in your Feb. 15 and Feb. 22 issues have aroused considerable interest in the laboratory, in this and other methods of producing continuous cast aluminum rod.

It has since been brought to my

attention that a second process, the Hazelett process, has been developed. We would certainly appreciate any information concerning this process which would facilitate further investigation.

C. E. MERENESS

Works Laboratory
General Electric Co.
Fort Wayne, Ind.

Our latest article on the Hazelett process appeared in our Jan. 25 issue, p. 53.—Ed.

Electroforming

Sir:

In your issue of Sept. 6, p. 11, there is information on mass production electroforming.

This office is interested in obtaining details of this process.

L. G. TAYLOR
Industrial Analyst

U. S. Dept. of Commerce
Bureau of Foreign and
Domestic Commerce
Field Service
Baltimore

Details of the electroforming process may be obtained from S. Fialkoff, vice-president of Camin Laboratory, Inc., 104-14 South Fourth St., Brooklyn, N. Y.—Ed.

Name Please

Sir:

In regard to the Newsfront item, in your Aug. 30 issue, p. 11, on the automatic device to give ammunition casings a 25,000-psi hydrostatic test, would you please give us the name and address of the manufacturer of this automatic device?

R. L. DONOGHUE
Easy Washing Machine Corp.
Syracuse, N. Y.

The manufacturer is Denison Engineering Co., 1158 Dublin Road, Columbus 16, Ohio.—Ed.

Data Book

Sir:

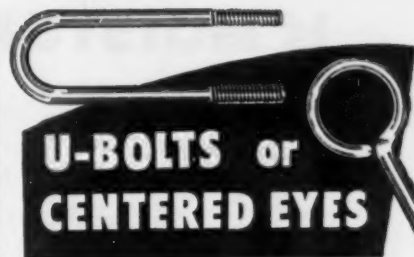
I have received my copy of "Directory of Tool Steels." The new edition is a great improvement.

Do you have a book listing all SAE steels with tables plotting draw temperatures in relation to tensile strength, brinell, etc? Usually these tables are for 1 in. sections and separate tables showing effect of mass, 2 in., 3 in., etc.

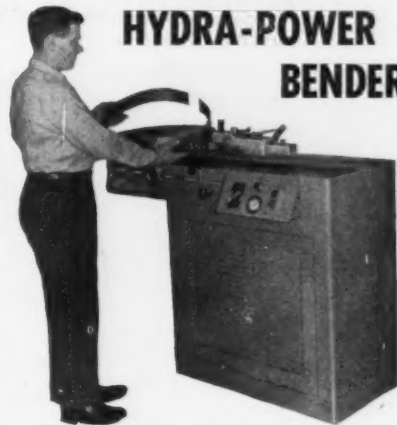
Ryerson published a book several years ago, "Alloy Steel Reference Book," and what I want is something like this.

R. C. HOFFMAN
Alliance, Ohio

We suggest you get a copy of "Metals and Alloys Data Book" by S. L. Hoyt.—Ed.



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BENDER



At last—a PRODUCTION BENDER •
that "bends them all" — tubing — •
angle — channel — extrusions — •
moulding—strip stock—and of course •
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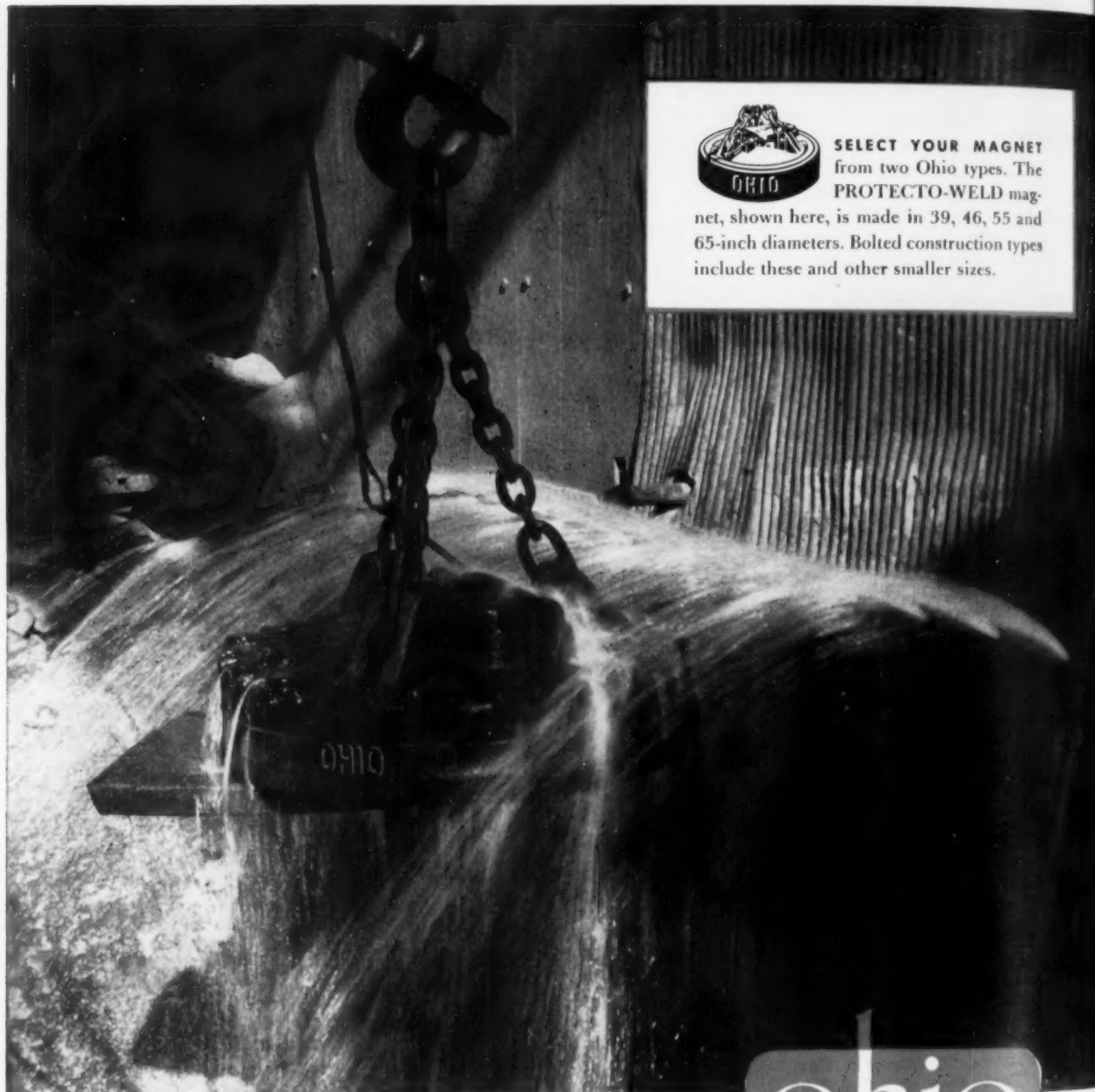
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SELECT YOUR MAGNET
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In addition to lifting magnets and control equipment, Ohio Electric also makes fractional horsepower motors, heavy duty electric cable hoists, nail-making machines and drill presses.

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CHESTER BLAND, President

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ELECTRIC

A-1024

Fatigue Cracks

By Charles T. Post

Uplift Organization

Karl Rannells, your f.f.j.'s Washington spy, reports that worry over allocation of materials for essential purposes has not kept the Defense Production Administration's mind off such morale-maintenance matters as strapless gowns. You'll be relieved to know that there will be no let-down here.

Tucked away in DPA's fourth quarter allocations is this specific provision: "Corset steels, steel, 334 tons; copper, 3000 lb."

Double Vision

One steel man we know is bemoaning the fact that he bought a small screen television set a couple of years ago instead of waiting for the new giant screens.

"When Howdy Doody and Clara-bell are on, the kids can only see Howdy. When there are two wrestlers, I can only see one of them. And when Dagmar hits the screen . . . well, I get gypped the same way."

Heave-Ho

Without looking the least bit green around the gills, the American Iron & Steel Institute reports that cerium, an element which helps cure seasickness is used in electric furnace steelmaking.

Presumably the steel is used for ship's rails.

Inflation Note

Your favorite family journal is feeling pretty grown-up these days, what with being 96 years old, but after looking over the Heald Machine Company's 125th anniversary book, we've decided your f.f.j. is a mere kid.

Heald has preserved the original ledger of Stephen Heald, the founder. If you think prices have gone up within YOUR time, you don't know the half of it. Here are some extracts:

| | |
|-------------------------------------|------------------|
| A Day's Pay, ranging from | \$.50 to \$1.00 |
| Sawing 5000 Shingles . . | \$5.00 |
| 3 Kitchen Chairs | 1.50 |
| Filing and Setting Saws . | .20 |
| Rent of Lathe for 1 day . | .25 |

| | |
|----------------------------|------|
| 1 Pair of Shoes | 1.25 |
| 12 Yards of Shirting . . . | 1.80 |
| 4 Gallons of Rum | 1.60 |

Most of the items are only of historical interest today, but we can't help coming up with the thought that if the company had kept the 4 gal of rum instead of the ledger, what a whale of a 125th anniversary celebration it could have thrown.

Puzzlers

The steel company in last week's puzzler should widen the corridor to a little over 18.5 ft. Better make it 19 ft and save the paint.

V. W. Russell, sales office manager of The Carborundum Co., writes to say that one of the typists in his office, Miss Evalyn Luzader, also enjoys the puzzlers and sends as evidence her correct solution to the frog problem. One of our foreign readers, R. Bouquet, Montbeliard, France, is a little late with his answer to the Farmer Jones problem (July 5). We didn't realize that European mail was that slow.

A king, his daughter and a page were imprisoned in a tower, in which the only opening to the outside was a window 100 ft high. Outside the window was a rope a little more than 100 ft long, which went over a fixed pulley.

To each end of the rope was attached a large basket, so that when one basket was on the ground, the other basket was opposite the window. A person could sit in either basket, but could not pull either part of the rope, or help another in the basket. In short, either basket could be made to ascend only by overbalancing it.

The king weighed 195 lb, the princess 105 lb, the page 90 lb. They found a chain that weighed 75 lb.

When any person was in either basket, the weight in the descending basket could exceed that in the other basket by only 15 lb, otherwise the descent would be too rapid. Furthermore, only two persons, or one person and the chain could be in the basket at any one time.

How could they manage it so that all three could escape and take the chain with them?

Lapping
Carbide
20% Faster!



Carbide spray nozzle orifices are finished to tolerances of .0005" at Spraying Systems Company, Bellwood, Illinois. New Elgin DYMO-C diamond abrasive used in place of diamond powder-oil mixture produces more pieces per hour and conserves diamond, too!

ELGIN
DYMO-C*
diamond abrasives

*C FOR CARBIDE

Here is a complete new diamond abrasive specially prepared to speed carbide finishing operations. It cuts faster, won't work back on the lap, won't settle and comes ready to use without time-consuming mixing. Write for complete information—ask for a free demonstration.

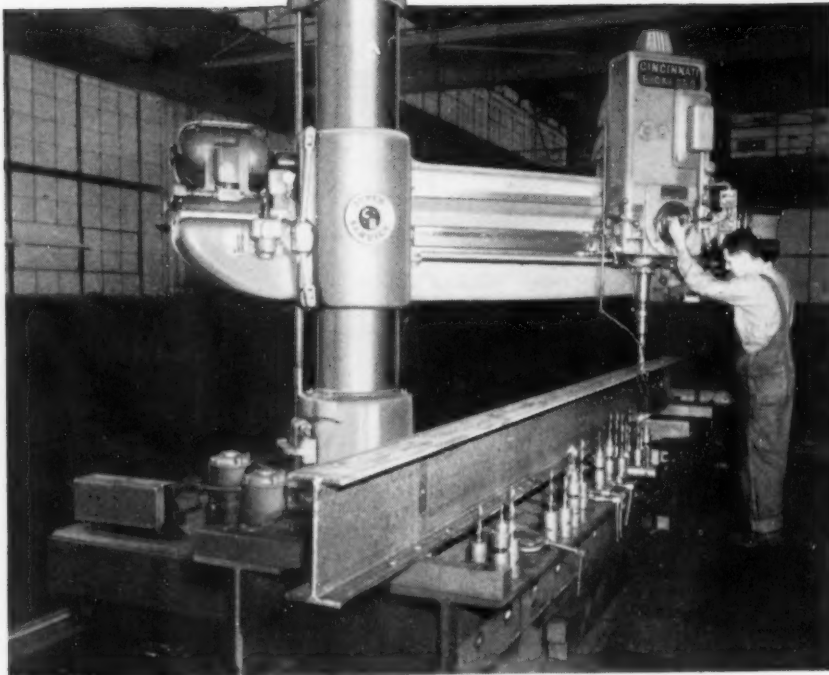
ALL ELGIN DIAMOND ABRASIVES ARE COMPLETELY PRODUCED BY ELGIN AND CERTIFIED TO CONFORM TO U. S. BUREAU OF STANDARDS SPECIFICATIONS.

ABRASIVES DIVISION

ELGIN NATIONAL WATCH CO.

ELGIN, ILLINOIS

the LONG



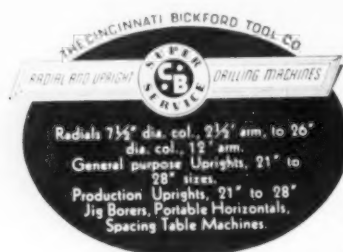
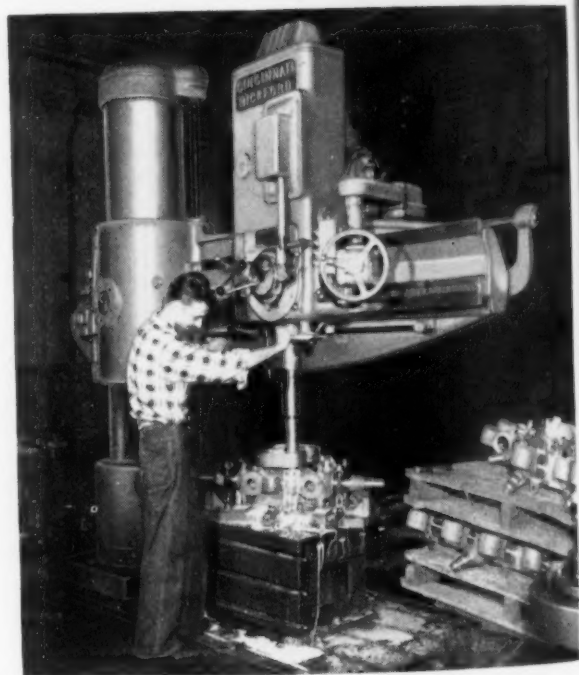
Various holes are being drilled and tapped in long "I" beams on this 8' arm 19" diameter column SUPER SERVICE Radial Drilling Machine, mounted on a track type base, at the plant of the Euclid Road Machinery Company, Euclid, Ohio.

The unusually heavy construction of this base, together with hardened steel wheels which travel on 80 pound, 56 gauge rails, provides the necessary strength in the proper position to help manufacture the parts of the framework for some of the largest road machinery in the world.

and SHORT jobs

For lighter machines, a similar smaller base machine, 36" gauge using 40 pound rails is available. Power traverse, as well as equalized power clamping to the rails is by individual electric motors which are protected by electrical interlock. All these motors are conveniently controlled by push button at the head of the machine.

To handle the usual small jobs, the Euclid Road Machinery Company, also have many SUPER SERVICE Radial Drills with the standard type base. This 6' arm 19" diameter column SUPER SERVICE Radial is handling their many small parts profitably.



For further information on SUPER SERVICE Radial Drills, write for Booklet R-29.

THE CINCINNATI BICKFORD TOOL CO. Cincinnati 9, Ohio U.S.A.

Conventions & Meetings

Sept. 21-23—National Assn. of Waste Material Dealers, Inc., annual fall meeting, Saranac Inn, Saranac Lake, N. Y. Association headquarters are at 271 Madison Ave., New York.

Sept. 24-26—National Truck Body Manufacturers & Distributors Assn., annual convention and supplier's exhibit, Had-don Hall, Atlantic City, N. J. Association headquarters are at 346 Connecticut Ave., N. W., Washington.

Sept. 25-26—Steel Founders Society of America, fall meeting, The Homestead, Hot Springs, Va. Society headquarters are at 920 Midland Bldg., Cleveland.

Sept. 26-28—American Society of Mechanical Engineers, fall meeting, Hotel Radisson, Minneapolis. Society headquarters are at 29 W. 39th St., New York.

Sept. 24-28—National Metal Trades Assn., annual convention, Palmer House, Chicago. Association headquarters are at 122 S. Michigan Ave., Chicago.

Sept. 26-29—Marking Device Assn., national convention, Edgewater Beach Hotel, Chicago. Association headquarters are at 134 N. LaSalle St., Chicago.

Oct. 1-2—American Machine Tool Distributors Assn., annual meeting, Had-don Hall, Atlantic City, N. J. Association headquarters are at 505 Arch St., Philadelphia.

Oct. 1-4—Assn. of Iron & Steel Engineers, annual convention, Sherman Hotel, Chicago. Association headquarters are at 1010 Empire Bldg., Pittsburgh.

Oct. 1-4—Society of Industrial Packaging & Materials Handling Engineers, annual Industrial Packaging and Materials Handling Show, Cleveland Public Auditorium, Cleveland. Society headquarters are at 20 W. Jackson Blvd., Chicago.

Oct. 3-6—Pressed Metal Institute, annual meeting, Hotel Drake, Chicago. Institute headquarters are at 13210 Shaker Square, Cleveland.

Oct. 5-7—Society of Industrial Designers, annual convention, Moraine Hotel, Highland Park, Ill. Society headquarters are at 48 E. 49th St., New York.

Oct. 8-13—Concrete Reinforcing Steel Institute, semi-annual meeting, Grove Park Inn, Asheville, N. C. Institute headquarters are at 38 S. Dearborn St., Chicago.

Oct. 9-12—Electrochemical Society, national convention, Hotel Statler, Detroit. Society headquarters are at 235 W. 102nd St., New York.

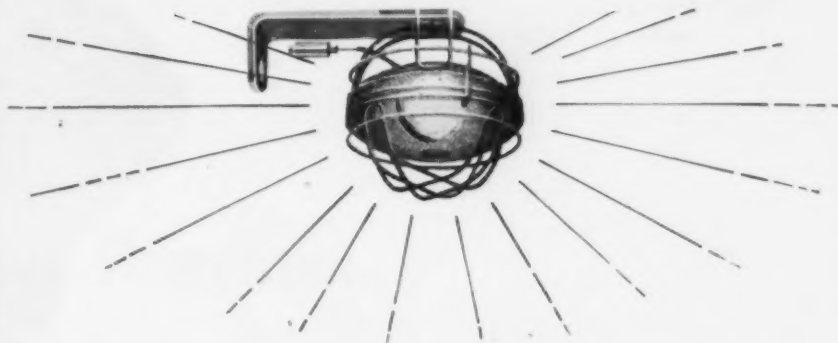
Oct. 10-12—Porcelain Enamel Institute, annual forum, Ohio State University, Columbus. Institute headquarters are at 1010 Vermont Ave., Washington.

Oct. 12-14—Metal Treating Institute, annual meeting, Hotel Detroit-Leland, Detroit. Institute headquarters are at 271 North Ave., New Rochelle, N. Y.

Oct. 15-17—American Institute of Mining & Metallurgical Engineers, Institute of Metals Div., fall meeting, Detroit-Leland Hotel, Detroit. Institute headquarters are at 29 W. 39th St., New York.

Oct. 15-18—American Gas Assn., annual convention, St. Louis. Association headquarters are at 420 Lexington Ave., New York.

Oct. 15-19—National Metal Congress & Exposition, Detroit. American Society for Metals headquarters are at 7301 Euclid Ave., Cleveland.



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ARE you ready for fire *when* it strikes? Week ends? Nights? During shut downs? Put a Kidde Automatic Fire Extinguisher System on the job—it's *always* on the alert against fire.

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TEN TIMES THE LIFE AND STILL GOING STRONG!

Ni-Hard[†] Pipe Proves Superiority in Resisting Abrasive Action

If your problem is abrasion, you'll be interested in this case history of Metal Mold centrifugally cast Ni-Hard pipe in action.

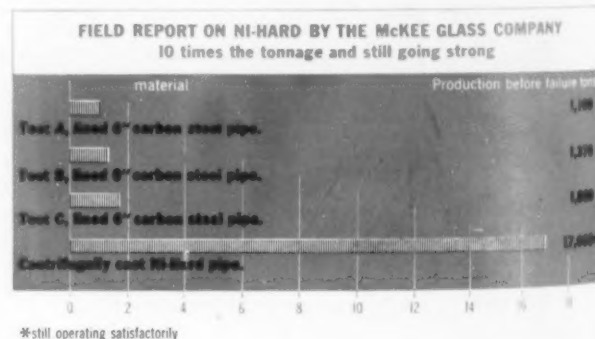
The McKee Glass Company, one of the nation's leading producers of molded glass for household and industry, uses a pneumatic conveyor system to handle its glass furnace charges. In this system tons of silica, sand, feldspar, borax, etc., are hurled at tornado-like speeds . . . about 100 miles per hour . . . through vacuum lines from boxcars to storage bins. Broken glass scrap (cullet) is added at the mixers to form a highly abrasive mixture.

Two years ago when the system was installed steel piping and later, lined steel piping was used. The severe abrasive action coupled with serious discoloration of the glass led to the search for a better conveying material. As a result, Metal Mold centrifugally cast plain end Ni-Hard pipe with a Brinell hardness of 600-650 was

installed in the line's most abrasive sections.

The result, as reported by McKee, was more than satisfactory. Contamination was reduced 80%. Ni-Hard resisted abrasion much more effectively, as shown by the chart below . . . thus far, in fact, has carried *ten times the tonnage and the line is still going strong!*

Today, the McKee Glass Company uses Ni-Hard exclusively in its conveying system. Their experience may suggest the answer to *your* abrasion problem.



[†]Nickel-chromium white cast iron.
Ni-Hard is a registered trade name of
The International Nickel Co., Inc.



U. S. PIPE AND
SPECIAL PRODUCTS DIVISION
AMERICA'S LARGEST PRODUCER OF CENTRIFUGALLY

THE IRON AGE Newsfront

► Pilot plant work on desulfurization of pig iron with calcium chloride has proved successful. Full scale tests of the process will soon be made.

► Many small and medium sized businesses are ignoring details of price and material controls. It's not because they are anxious for unfair advantages or profits—nor are they dishonest. Fact is it is simply impossible for the small office to keep up with the mountain of paperwork strict compliance would require.

► The U. S. may or may not ship Britain the 825,000 tons of steel she is seeking. A similar request (for 2 million tons) just after World War II produced only 50,000 tons.

If semifinished steel were shipped it would mean a scrap loss of over 200,000 tons. This much scrap combined with purchased scrap and hot metal would be enough to make 800,000 more tons of steel ingots in the U. S.

► Progress is being made in taking copper out of automobiles but so far there has been little real progress on two major items—radiators and heat exchangers for car heaters. However, one large producer has been able to cut its copper use by 50 pct. which is somewhat above the industry average.

► Another new supplier of exothermic chromium alloys is expected to start shipments within the next 60 days. Designed for ladle additions only, this ferroalloy will be used in openhearth practice for steels containing up to 1.00 pct chromium.

► Look for important new ideas on recovery of agricultural and rail scrap very soon. If they work out as expected they will be a real contribution to steelmaking scrap supply but they won't ease the need for more intensive work on industrial scrap.

► The Air Force is testing a new type of impact recorder in an effort to reduce shipping damages. It will go along with the cargo to find out when the bumps came and how hard they were. It measures 9 x 9 x 5 in. and can easily be put in crates, trucks, etc. Results will appear on a wax-coated tape.

► Two trends worth watching in the automobile industry are: (1) Increasing use of induction hardening for parts and for heating forgings; and (2) growing use of shot peening to step up fatigue life of springs, axles and gears.

► The Bureau of Standards has developed a lightweight concrete in which trapped air bubbles constitute as much as 45 pct of the concrete volume. Standard mixing equipment is used but an added detergent makes the mix foam and creates the air cells.

► The Air Force now finds that it is over-planned on the use of aluminum forgings and is now looking for aluminum casting capacity. Right now, forging facilities are much too small to handle the tonnages the Air Force wants.

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free or controlled supply



Regardless of free or controlled supply of your light gauge cold rolled strip and/or spring steel you can always count on more feet per lb., more finished parts per ton from Thinsteel. Precision rolling and advanced processing techniques have assured greater yield for many years to users of CMP Thinsteel; provided the margin of difference (through close tolerances and exacting physicals) for improved production and product betterment.

Perhaps we can't supply your requirements now, however we welcome your interest for future needs and will be pleased to send you information.



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ALUMINUM: Growing Giant in Metal Scene

Good properties, economic advantages helping to extend and expand markets . . . Technical advancements will boost reserves of ore . . . Electricity the problem.—By Bob Hatschek.

The puzzle in aluminum's future is how vast production and use will grow. The industry has spurred phenomenally since the start of World War II and still we are faced with shortages of the metal. Most of today's shortage is due to rearmament but there is plenty of room in a purely civilian economy for far greater tonnages of aluminum than our present capacity can handle.

Aluminum has already taken over some markets (aircraft, foil, utensils and high-voltage power transmission) and in these instances increased consumption depends on increased production of these products. However, there are many applications where aluminum has only recently been tried and found promising.

Future Markets—In these we may find the future large markets for the metal. Here increased use does not depend on increased production but instead depends on improved products, higher efficiency and better economy.

The industry expects car producers to be among its largest future customers. Automatic transmissions already use much of the light metal and the return of aluminum pistons and cylinder heads in many cars only awaits increased availability of the metal. Trucks and trailers use aluminum to boost payloads. Kaiser-Frazer diecasts garnish moldings of aluminum.

At least one firm is experimenting with diecast aluminum cylinder blocks, claiming that ease of manufacture makes them cheaper

than cast iron. Another is testing aluminum radiators, at government suggestion, in view of the prospect of a long-term unrelieved copper shortage.

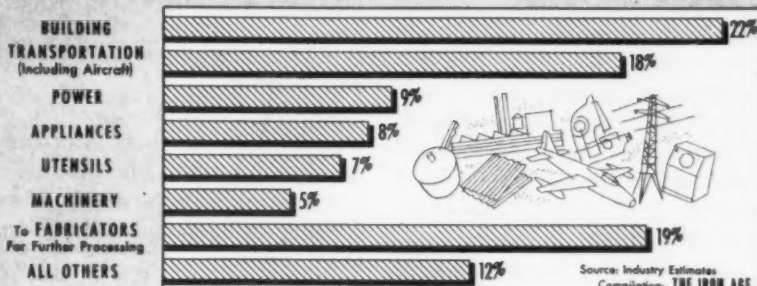
Auto Advantages—Light-weight aluminum doors, hoods and trunk lids may prove economical, permitting the use of smaller,

Now aluminum cans by Reynolds Metals Co. have entered the picture (see next page).

The construction field is another which can provide huge markets for aluminum. Corrugated sheet aluminum for farm roofing, grain bins and the like has really caught on and this market is far from saturated. The big use, however, would be in large industrial and office buildings where aluminum walls permit lighter steel skeletons and thinner walls.

The latter really adds up to floor space in tall buildings which

ALUMINUM DISTRIBUTION by CONSUMING INDUSTRIES - 1950



cheaper hinges and balancing springs. Bodies and fenders could come later.

Cars using aluminum for these parts would resist corrosion; they would have lower centers of gravity, giving better road stability; and their total weight would be less, resulting in lower fuel consumption. There are a few thorns, though, such as higher metal cost in some cases and the fact that paint will not adhere to aluminum as well as to steel. Greater production can lower cost of aluminum and color anodizing could solve the paint problem when that type of finish can be made impervious to the sun's fading effects.

are usually rented on an area basis. Aluminum's reflective properties also aid in heating and air conditioning.

What About Ore?—The list of market probabilities and possibilities include screening, heat exchangers, electrical conductors, packaging applications (collapsible tubes, foil, cans), decorative and functional diecastings, fasteners, reciprocating machine parts where light weight improves performance and others.

Aluminum is a possibility whenever ease of fabrication, good thermal and heat conductivity, light weight, corrosion resistance

Turn Page

CANS: A New Rival for Tinplate

Reynolds has two new processes for making aluminum cans . . . One is plastic-coated aluminum foil, other is aluminum-coated steel . . . Disclosure seen premature—By Bill Packard.

Reynolds Metals Co. has developed two new processes for making aluminum cans.

One process uses heavy aluminum foil and plastic. The other welds a permanent bond of aluminum foil onto steel sheets. Either process would replace scarce tin, all of which has to be imported over long ocean routes.

Satisfactory results have been obtained by both processes in Reynolds' laboratories. If ultimate efforts at mass production fulfill the promise of pilot operations, this would be attainment of the aluminum industry's long-standing dream to invade the container field dominated by tinplate.

Disclosure Premature—So far Reynolds has made only a few of the aluminum-plastic cans. No contracts have yet been signed. When they are the government will get first call.

Actually, disclosure of the new can was premature. Reynolds had been withholding announcement of the development pending approval of final patent rights on its process.

But RFC Chief W. Stuart Symington let the aluminum can out of the bag. At a press conference in Washington he showed reporters a sample can the company had sent him. His agency is the country's sole buyer of tin, and he emphasized the potential of the aluminum can as a tin-saver.

The Method—Reynolds later revealed the following steps in making the cans:

A coil of heavy aluminum foil is given a plastic coating in a continuous, high-speed process. Labels can be printed on the plastic surface in up to seven colors if desired. The aluminum-plastic coil is then heated and rolled under



STUART SYMINGTON . . . Slip of the tongue.

pressure on a tube or mandrel. This becomes the body of the can to which are added aluminum top and bottom.

The can may be used for any type of food product. And there's no limit on size. Plastic used for the coating can be made from a number of chemicals now used by that industry.

Advantages—The company believes its aluminum cans can be manufactured at a cost competitive with tinplate cans, and in

many instances cheaper. Machinery for making the cans may be installed at the packing site, in which case Reynolds would furnish the plastic-coated aluminum coils. This would permit huge savings in shipping space now needed for cans.

Scrap value is another factor which the company believes will work to its advantage. Used cans can be smelted and aluminum content reclaimed. On the other hand, used tin cans are irretrievably lost. Detinning facilities, usually located near can making plants, only salvage tinplate scrap.

Clad Sheets—The other Reynolds development is aluminum-clad steel sheets. (They call it "aluminized steel".)

A metal sandwich is made by placing aluminum foil on either side of a preheated steel sheet. The sandwich is then passed through a rolling mill. Heat and pressure weld the aluminum to the steel, forming a permanent bond. Thus, the steel has an aluminum coating on either side.

Both these developments are the outgrowth of Reynolds' search for more peacetime applications of aluminum launched at the end of World War II. Strangely, present restrictions on civilian use of aluminum (they're allowed 46 pct of 1950 use) may limit application of this peacetime product to military uses.

Special Report

Continued

or pleasing appearance are desirable.

What about ore reserves? Today the U. S. imports about two-thirds of its bauxite, most of it from the nearby Caribbean area. Known deposits there are huge.

Bauxite with less than 45 pct aluminum oxide content is not used at present but when commercial use of 30 pct ore becomes economically practical, we will have an almost inexhaustible source within our own borders since aluminum is one of the most

abundant elements in the earth's crust.

It requires about 8 to 9 kwhr to produce a pound of metal electrolytically. Thus, low-cost power is vital and it isn't available now in the quantities necessary for such huge production.

Producers are now using hydro power and natural gas and one is planning to use lignite. Atomic energy is a future possibility—but how much will such power cost and when will it be feasible are major considerations.

STRIKES: Incentive Rates Squabble

Question is what is fair day's work before worker starts on bonus . . . Series of strikes have cost thousands of tons of steel . . . Producer and union are negotiating bonus rate.

A series of strikes and slowdowns that have cost thousands of tons of steel production point to the urgent need for an understanding between the United Steelworkers of America (CIO) and the steel industry on the definition of a fair day's work.

Basis of many of the walkouts and slowdowns, notably in the Youngstown area, is worker dissatisfaction with incentive rates. This dissatisfaction, in turn, stems from inability to agree on how much a man must produce before he begins to earn an incentive bonus.

What Is It?—In short, what is a fair day's work for the standard pay rate the man receives? (THE IRON AGE, May 24, 1951, p. 112.)

Some industrial relations experts are pessimistic about the chances of an agreement being reached. On the other hand, there are reports that the union and a large independent producer are on the verge of agreement. The search has been going on since 1946.

Youngstown Sheet & Tube Co. has been hardest hit by unrest. U. S. Steel Corp., Jones & Laughlin, and Sharon Steel have also suffered. Strikes and slowdowns in S-T's Youngstown operations have been going on for months. The disturbances have hit the company's blooming mill, cold strip mill, hot strip mill, and cold strip pickling departments.

Bitter Loss—Sharon Steel Corp. was hit by a strike in its open-hearth department in mid-July over incentives—a strike that cost 5000 ingot tons of production. The company's blooming mills at Farrell and Lowellville have also been affected.

J. & L. has experienced several

slowdowns in its seamless hot mill at Aliquippa. Early this year, Allegheny Ludlum Steel Corp. reported a slowdown on its blooming mill at Brackenridge over incentives.

Also contributing to worker restiveness is the fact that incentive rates of necessity are set up department-by-department. Even where the system works out to everybody's satisfaction, men in other departments not yet covered are inclined to become impatient.

Senseless Strikes—Other recent disturbances in the industry have been over apparently trivial reasons—the Republic Steel Corp. strikes at Youngstown and Gadsden, Ala., for example. At Youngstown 50,000 ingot tons of production were lost over the discharge of one man, AWOL for more than a month.

At Gadsden, 14 miles of natural gas pipeline production were lost over worker demand for a noon shutdown so they could all eat together in jolly comradeship. Per-

haps a new worker psychology is evolving—the strike habit.

Despite these signs of unrest, industry observers say they can detect no "pattern" of disturbances such as have preceded contract negotiations in the past. The union is expected to serve notice by Nov. 1 at the latest that it wants to negotiate a pay raise. The demand may come earlier. (THE IRON AGE, Sept. 13, 1951, p. 104.)

Workers Moved to Defense Work

Canada's policy of using indirect pressure to move labor into defense industries is working. The government's program of credit curbs and material controls is causing production slowdowns in consumer industries, and workers are shifting to defense plants.

A similar situation prevails in the United States. Industries cut back by restrictions on materials lose workers to defense plants.

Employment is almost at a maximum, but layoffs are steadily increasing in nonessential industries. Manpower shortages have developed in some fields, notably farming, mining and carpentry.

WSB Presses for Settlement

Workers at the American Smelting & Refining Co. plant at Garfield, Utah, will get an 8¢ hourly wage boost if the disputing parties accept the Wage Stabilization Board's recommendation.

Expectations are that 1300 CIO workers and management officials at the copper-producing facility will agree on the amount suggested. Both parties to the wage dispute have been asked to report to WSB by Sept. 24 on their discussions of the increase and corollary issues.

Two WSB regulations, the 10 pct wage-raise formula and the cost-of-living policy, permit the 8¢ increase recommended. The board has not adopted a general policy for handling what the union calls "intra-plant inequities." (THE IRON AGE, Sept. 6, 1951, p. 125.)



"KOLDFLO": Cold Extrusion Tamed

Mullins' process needs no titanic presses, cuts machining . . . Process turned over to commercial manufacturing . . . New Jersey firm to take advantage of steel, labor saved.

Cold extrusion of steel with Mullins Mfg. Corp.'s Koldflo process on presses that are available to industry is stepping into commercial manufacturing under licensing agreements between the Warren, Ohio, firm and metal fabricators.

One of the first, a Hillside, N. J., firm, Hypac, is now tooling up to produce a pressure cylinder about 6 in. long. The previous method of fabrication involved stamping, welding, and machining operations. Production started with a steel piece weighing 12.75 oz.

Cost Factors—With Koldflo the firm will use a 6.30 oz piece, undergoing a *single* operation. Material saved is 6.5 oz and cost of the steel has been shaved 30 pct. The old method turned out 6.75 oz of scrap, Koldflo only 0.30 oz. Cost savings follow through to labor and handling.

In a similar fabrication of a larger pressure tank, unit material costs of the previous method ran \$3 per piece. Cost of a unit with Koldflo is \$1.07.

Mullins engineers say that a plant producing a given number of parts with a forging and machining line might cost \$6 million. Cost of a plant producing the same number of products would be only \$2 million.

Conquer Difficulties—Holdbacks to the first German cold extrusion process and early adaptations in this country were the vast pressures and big presses needed to make steel flow into dies. Special lubricants were needed. Mullins claims its process is new—only the old principle has been retained.

Even conservative observers say that release of a practical cold extrusion process to general industry has opened the door to

revolutionary manufacturing techniques. Its immediate effect is more complete use of finished steel, important in the shortage.

Mullins' Warren plant is all set to tear into \$20 million worth of



NEAT TRICK: Hydraulic presses squeezed the block of steel that Mary Elaine Long holds in her right hand to the shell shape she holds in her left. Another product is in the foreground—a gas cylinder to inflate life jackets.

Army and Navy contracts for shells (THE IRON AGE, Aug. 23, p. 88). Although Mullins will make shells with heavy walls in cylindrical shapes, Koldflo can be turned to thin-walled pressure cylinders, gear blanks, pulley hubs, bearing housings, etc.

Strengthens Metal—As mentioned, cold extrusion saves drastically on steel. Scrap waste is almost eliminated. It also means savings in labor, machining, and handling. Cold working the metal strengthens it and in some cases alloy steels can be dropped from production. Mullins also claims

Koldflo will coin, extrude forward or backward, compress, iron, or expand.

Weight and size tolerances can be kept within limits needed for most mass produced precision parts. And because of the glass-smooth surface possible, machining could be kept at a minimum, Mullins engineers say.

Nickel Steel Freeze Tightens

Nickel-bearing steel may disappear entirely from the commercial market within the next 6 months because of rising defense demand.

This opinion is expressed by control officials in answer to complaints by mining machinery manufacturers that they are being shorted in materials allocations.

Often, they say, materials can be had only when they subcontract to build machine tools or accept military orders.

They cannot get enough materials to meet needs of mine and smelter operators, they say, thus threatening a breakdown of the mining program. And unless they get more materials, conversion to production of machine tools or direct defense items may be necessary to keep going.

NPA has promised supplemental allotments for the fourth quarter. Also, the agency is working on a proposed order which would schedule equipment to mine operators thus authorizing, in effect, a defense rating for materials and parts.

Jet Engine Pump Plant Scheduled

Borg-Warner Corp. will build a \$3,000,000 plant for the manufacture of electric fuel and hydraulic pumps for jet engines at Wooster, Ohio. Construction will start as soon as building materials allocations are granted, probably early next month.

The 104,000-sq ft factory will have working space for nearly 800 people when it opens next spring. The 32-acre plot will permit future expansion as needed.

BEARINGS: Need Challenges Capacity

Expansion attempts foiled by not enough machine tools . . . If tools are found steel shortage may hurt . . . Not many bearings imported yet . . . Nickel is problem—By Bill Taylor.

Defense demand for bearings has increased to a point which challenges the ability of manufacturers to produce. Attempts to expand facilities have been temporarily stymied by an insufficient supply of machine tools. However there is no marked increase in imports of foreign-made bearings as suggested some weeks ago by the United States Munitions Board. (THE IRON AGE, Aug. 9, 1951, p. 88.)

As soon as more machine tools get into the hands of bearing producers it is expected that a problem of adequate steel supply will have to be met. Alloy steels with a high nickel content are required. Continued cutbacks in nickel allocations to the industry may pose a problem.

Needed for Defense—Yet one mill representative feels sure that the government won't let them down. Bearings are too important to defense, he says. Further use of boron steels in bearing manufacture will also aid greatly.

Delivery schedules of major bearing producers range from 4 to 6 months for standard sizes but in larger or special sizes, shipments are scheduled between 8 to 10 months, a year, or longer.

One industry representative, familiar with foreign bearing production, observed that Italy was the only European nation, other than Sweden, which had reached any substantial bearing production.

Helps Neighbors—It is this production which is helping to re-

build capacities in other countries such as France, Germany and England. One large American producer is still exporting bearings to Europe. Shipments are small.

Although there are some small imports of foreign-made bearings these are imported by manufacturers from related companies in Europe and represent only limited quantities.

Timken, which supplies many major bearing producers with bearing steels, is endeavoring to meet an increased demand by working "around the clock." Operating a 24-hr day, 7 days a week, the company is meeting demands of their own roller bearing company and continues to supply other manufacturers at a greater rate than before the defense program got under way.

Generally the increased demand for bearings could be met with added machine tools on production lines. Whether sufficient bearing steels could be furnished to keep up with expanded facilities is another question.

Transportation

Freight Cars:

Shortage affects finished steel shipments . . . Peak believed past.

Steel producers in the Pittsburgh district are sweating through another gondola railroad car shortage. Peak of the shortage came in late July and early August. While the situation has improved, thousands of tons of finished steel are piled up in mill yards awaiting shipment.

At one time, unshipped steel in the Pittsburgh district probably totaled 30,000 tons or more. The shortage also affected Chicago mills.

At a meeting of the Allegheny Regional Advisory Board in Pittsburgh, Midwestern floods that tied up many cars were held largely responsible for the shortage. Once the flood areas were cleared up, the situation improved.

Some steel producers feel that basically there is really no serious shortage, that steady improve-



LONG RAILS: Twenty-eight gondolas are needed to carry these 1443-ft rail sections. Lorain crane, made by Thew Shovel Co., picks up one end of rail and guides it as train backs under it.

ment can be looked for. A large Pittsburgh mill hopes to be back to normal by the end of this month. Others are more pessimistic, believe the situation will worsen. It was pointed out that the Pennsylvania Railroad, most important carrier in the area, has just about completed its building program.

Chances of the carbuilding program reaching its goal of 10,000 cars per month are considered remote. Car deliveries in August totaled 7183. And there was no indication steel allotments to car builders would be increased.

Shippers and carriers must use freight cars more efficiently to forestall a possible severe shortage, warns the U. S. Chamber of Commerce. There is already a shortage of about 20,000 cars daily, and this will worsen with the fall freight pick-up.

STEEL: Fairless Works Shapes Up

Farm country takes on appearance of big steel mill despite structural restrictions . . . Hope to melt steel after first of year, make flat-rolled by November—By John Delaney.

A tribute to careful advance planning is the progress made since ground was broken Mar. 1 for the Fairless Works of U. S. Steel Co. and the National Tube Co. plant at Morrisville, Pa. What was once peaceful farm country is already taking on the unmistak-

may reach 8000 in the next 60 to 90 days—is shifting earth, pouring foundations and raising the steel skeletons of mill buildings at a fast pace. When the mill is in full operation, approximately 6000 workers will be employed.

Foundations are just about com-

Ever Hear of Fairless Town?

Ever hear of Fairless Town, Pa.? If not, don't feel too badly. It's not even on the maps—yet. In fact, Uncle Sam has just got around to naming a postmistress for the town.

As you may have guessed, Fairless Town is situated near the Fairless Works of U. S. Steel Co., at Morrisville, Pa.—4½ miles northwest of the plant, to be exact. It's just off route 1, the main road to Philadelphia.

Fairless Town is the result of housing need for employees of Fairless Works and other industries springing up in the area. Although ground was broken only last May 15, close to 700 houses already are under roof. Eighty are now occupied. By the close of this year, 1100 houses will have been built.

Eventually it is expected that Fairless Town will expand to a community of 4500 homes. This means the population may reach 16,000.

Fairless Town is being developed by Danherst Corp. of John W. Galbreath & Associates, big-time real estate operators. Most of the houses will be prefabricated Gunnison homes. Gunnison is a U. S. Steel subsidiary but the corporation has no other connection with the development.

able appearance of a big steel mill. The sight is impressive.

Government restrictions on use of structural steel for expansion of steel capacity is expected to slow the tempo. But if all goes well the company expects to be melting steel after the first of the year. Flat-rolled steel will be produced before then—possibly by November—from coils shipped across Pennsylvania from the big Irvin Works near Pittsburgh.

Employment Climbs—Although almost lost in the immense 3800-acre plant site along the bank of the Delaware River, an army of construction workers—the total

pleted for the nine-furnace open-hearth shop, already partially under roof. The two 1650-ton blast furnaces are taking shape. The strip mill building is under roof. So is the tube mill of National Tube Co. The coke and coal chemical plant is shaping up, as is the tin mill building. About half the 75 miles of standard-gauge railroad track inside the plant has already been laid.

No Smoking—The openhearth furnaces, each of 275-ton capacity, will be the first in the industry designed to include precipitators to eliminate smoke emission. Smoke and gas from the furnaces

will be passed through boilers for cooling before reaching the precipitators. The furnaces will be fired by Bunker C Oil and coke.

Annual purchased scrap requirements of the plant—capacity 1.8 million ingot tons—will be approximately 450,000 tons. No attempt has been made to stockpile any significant tonnage.

Room to Expand—U. S. Steel has avoided one big mistake of the early steelmasters. Mill buildings are so spaced that additional capacity can be built without affecting efficient material flow.

A feature not found in most mills will be a loading platform for trucks.

Materials Handling—When coal is delivered by boat, it will be unloaded by two blast unloaders, then transported on a 6000-ft conveyor either to the coke handling plant or to storage piles. A 5700-ft conveyor will move furnace coke from screening facilities to the blast furnaces.

The 45-in. slabbing-blooming mill will be the first of its type having fixed vertical roll drives, driving through universal vertical spindles.

Each day 230 million gal of water will be circulated through the mill.

Big Job—It is expected that about 8,750,000 cu yd of fill will have been handled in building up the plant site from an elevation of five to 16 ft above mean sea level to 25 ft for the floors of some buildings and 20.5 ft for all yards. So far, about 5.5 million cu yd have been handled. The fill is from excavation of a slip to provide a mooring place for ocean ships that will haul iron ore from Venezuela. At the start, Mesabi ore will be used.

About 700,000 cu yd of concrete will be poured, enough to build a highway 20 ft wide, 8 in. thick and nearly 300 miles long.

Nearly 200 borings were taken to determine subsurface conditions at the site.

SCRAP: "Junk" Wins New Prestige

Inventories kept on reducing diet . . . Have no fat for winter . . . No takers on prediction of steelmaking fate . . . Campaign is after huge cache of dormant heavy scrap—By Ted Metaxas.

The humble junk that factory owners swore about decades ago and paid to have removed is now getting as much attention and prestige as if it were gold plated. As ominous as a thundercloud overhead is the question of whether enough scrap iron and steel can be generated for uninterrupted top capacity steel-making through the winter.

The scrap trade, which has the responsibility of getting out the bulk of the 36 million gross tons needed in '51, will have to pretend that it's June in January. As much as possible they must ignore the cold of winter and keep open scrap sources that are shrinking from the cold. (See p. 158.)

Unrelieved top capacity steel-making has this summer burned up the scrap almost as soon as it was found. Stockpiles have none of the summer fat needed to survive winter.

Ironically, the future of winter steelmaking may depend on the whims of the climate. If the winter is a mild one, scrap men will push the scrap out. If cold and snow slams down, a tapering off of traffic flow is inevitable.

No one expects a flood of scrap to pour in before the cold begins. Dealers' stocks have been flat for a decade. There is no reserve there to serve as a backstop.

No Predictions—No one is willing to make a hard and fast prediction on whether capacity steel-making will survive in the cold months. Consumers of scrap are in all shades of pessimism. All are aware of the peril.

Industry reports indicate that in Pittsburgh inventory is about 10 days and retreating slightly.

Detroit is seen as better off with about 2 to 3 weeks scrap on the ground. Chicago scrap piles

stand at about a 2 to 4 weeks' level. Cleveland has improved its stocks to 1 to 2 weeks. Electric furnace stocks fall much below the openhearth level.

Coast to Coast—A multi-pronged scrap drive is reaching across the country. Millions of dollars worth of publicity and advertising has made every manufacturer aware of his duty in releasing dormant heavy scrap such as old machinery, fixtures, jigs, etc. Both scrap and steel leaders are positive of a vast cache of heavy scrap hiding under dust in factory corners. Industry has shed indifference to cooperate fully.

The campaign is not only aimed at "extra scrap." It is needling traditional producers into vigorous effort. High on the list are autowreckers. They have been held back by a multitude of town and city ordinances forbidding burning of upholstery and non-metallics within city limits. These must be suspended but local politicians are adamant. Flow of scrap from this source has also been retarded by a profit motive to hold on to car hulks for the value of replacement parts. Autowreckers have formed committees of their own and it is reported dealers are making more trips to the auto graveyard to prepare scrap. Much more can be done.

Revive Campaigns —Farmers are a target for a large-scale publicity campaign by NPA. Manufacturers are beginning to do more than order an occasional piece of scrap turned in. They are wiping the dust off full-scale World War II campaigns and turning the heat on all over again.

Last week Phil Murray wrote his 2200 CIO unions to set up scrap salvage committees. This



SCRAP: Defense Mobilizer Charles Wilson practices what he preaches and hands in a piece of scrap to the Army's scrap drive. Last Week Wilson warned an emergency conference of steel scrap representatives that the future of steelmaking depends on a scrap flow pick-up.

scrap campaign that only a short time ago was a target for mockery is shaping up into a nationwide scrap hunt that may spell the difference between not enough scrap and just enough.

Scrap sources still report that the drive has not yet shown any appreciable results—but the turning point to big volume contribution may come shortly. Steel firms have turned out their force of steel salesmen into the hunt. They are serving as scrap detectives, knowing where the scrap goes to and the state of manufacturing plants. American Warehouse Assn. will also put its 7000 salesmen on the scrap spoor.

Won't Help—The Maritime Commission has asked for bids on salvaging of three freighters sunk or beached during the last war. Scrap experts told THE IRON AGE that the Commission's proposed salvaging of 125 such ships takes a great deal of time. This offer will not relieve the winter shortage.

PRIORITIES: Will DX Scuttle DO?

Some officials see CMP dropped in future . . . NPA says DX is primarily for Defense Dept., AEC . . . Military will get super priority in items normally bought by firms—By Ray Stroupe.

Foundation for a future system of preference ratings instead of the single band DO method was a little more solid last week with National Production Authority establishment of the new DX priority rating.

This could prove to be the first step in undermining the Controlled Materials Plan so that later it would have to be jettisoned. Government officials are still publicly acclaiming adherence to the CMP policy line but privately they have fears that sometime in the future CMP will have to be abandoned for the graded priorities system.

All Over Lot—Growth of these super priorities can soon flourish all over the industrial lot, leaving no room for CMP. NPA is trying to forestall this kind of thinking.

It has ruled that DX priorities are primarily for the benefit of the Defense Dept. and Atomic Energy Commission. The symbol applies to urgently needed products, components, and materials, but does not include steel, copper, or aluminum.

NPA calls the DX rating "an emergency device, strictly limited in use" to expedite vital production. Despite this nomenclature, NPA now has taken its first formal action to get rid of single-band (DO) priorities, as THE IRON AGE has forecast for some months.

Establishment of the new rating necessitated amendments to NPA Reg. 2, covering basic rules for priorities, and CMP Reg. 3, on basic rules for materials control.

Military Buys—One result of using DX will be to give the military super-priority regarding many items normally bought by civilians, including all consumer durables. Procurement of compo-

nents for building machine tools also will be facilitated, NPA expects.

A supplier may use the new symbol on his own orders to get materials or components needed to fill his customer's DX order. This action was not authorized in special directives which NPA has issued, and probably will continue to issue, to cover emergency situations.

If an entire series of preference ratings is established, NPA will be adopting procedures used briefly at the beginning of the World War II emergency. These



KEGS OUT: Fibre boxes are replacing the familiar wooden kegs for nails at Columbia Steel Co.'s Pittsburg, Calif. plant. Columbia claims boxes save 30 pct on storage space and offer cheaper and safer handling. Replaceable tops protect nails against rust and dirt.

were scrapped soon for a controlled materials system.

In addition to setting up the DX symbol, NPA has changed its Reg. 2 to provide that DO-rated orders in the A, B, C, or E series, which have been accepted and scheduled for delivery, will be given priority if the supplier cannot deliver on time all DO orders on his books. No alteration of rules applying to acceptance of new orders is contained in the change, NPA says.

Industry Controls This Week:

NPA Orders

NPA Reg. 2 and CPA Reg. 3—Amended to provide for establishment of DX ratings.

M-22 Amend.—Liberalizes permissible use of aluminum scrap.

Dir. 3, CMP Reg. 1—Firms can increase to 40 pct amount of quarterly allotments ordered for delivery in any one month.

OPS Rules on Extra Freight Costs

Sellers may add freight increases to ceiling prices only if the pertinent regulation specifically permits this addition, Office of Price Stabilization has ruled. Generally, sellers must determine their standing on freight rate boosts from Interpretation 1, GCPR. Freight increases may be added only where ceiling price was figured on an f.o.b. basis, or where the delivered price reflects freight costs.

Executive Picked for NPA Post

Leroy C. Stewart, manager of the Atlanta sales office of the Dow Chemical Co., has been named chief of the Facilities Branch, Chemical Div., National Production Authority.

Clarify Auto Price Markups

Automobile dealers now have authority to pass along to consumers any wholesale price increases plus normal percentage markup.

Office of Price Stabilization issued an order giving the dealers an automatic method of computing new prices. Authorized in-

Increases for Fords and Chryslers may range from about \$50 to more than \$270.

Approved price hikes for General Motors products may range from \$60.83 for one Pontiac model to \$208.85 for a Cadillac Imperial Sedan. Increases are estimated retail list price markups.

NPA Orders Equal Priority

National Production Authority has ordered that until Oct. 1 DO ratings accompanied by 2 digits will continue to be given equal preferential status with the new series of ratings under CMP. All DO ratings which apply to deliveries on or after that date will have equal status.

Welded Wire Fabric Controlled

Welded wire fabric will be classified as a controlled material as of Jan. 1, and the industry will operate under production directives approved by the steel division of the National Production Authority.

Under the proposed plan, wire mesh manufacturers will be classed as "further converters" under the basic steel order. Failure to convert existing DO orders to ACM orders will deprive them of a place on production schedules.

NPA Permits More Rescheduling

National Production Authority has authorized the Defense Dept. to reschedule deliveries of steel and other materials necessary to prevent slow-downs in its ships and tank-automotive programs. Previously, only shipments for the aircraft program were permitted to be shuffled.

Aluminum Scrap Use Liberalized

National Production Authority has amended M-22 so as to broaden definitions and to permit use of aluminum scrap by anyone qualifying as a producer, smelter, fabricator, or reclaimer instead of firms specifically named.

Scrap shipments under toll agreements are prohibited after Sept. 30 without NPA approval except specified shipments by fabricators. Also, scrap must be

Turn Page

Production

STEEL: Output of Ingots, Castings up in August

As Reported to the American Iron & Steel Institute

| | Openhearth | | Bessemer | | Electric | | Total | | Calculated Net Tons Weekly | No. Weeks in Month |
|-------------------------|------------|----------|-----------|----------|-----------|----------|------------|----------|----------------------------|--------------------|
| | Net Tons | Pct Cap. | Net Tons | Pct Cap. | Net Tons | Pct Cap. | Net Tons | Pct Cap. | | |
| 1950 | | | | | | | | | | |
| January | 7,136,227 | 96.6 | 379,252 | 80.6 | 426,318 | 73.0 | 7,941,797 | 94.0 | 1,792,731 | 4.43 |
| February | 6,145,634 | 92.1 | 255,565 | 60.2 | 401,833 | 76.2 | 6,803,032 | 89.2 | 1,700,758 | 4.00 |
| March | 6,750,884 | 91.3 | 265,726 | 56.5 | 481,212 | 82.4 | 7,497,822 | 88.8 | 1,692,511 | 4.43 |
| 1st Qtr. | 20,032,745 | 93.4 | 900,543 | 65.9 | 1,309,363 | 77.3 | 22,242,651 | 90.7 | 1,729,600 | 12.86 |
| April | 7,318,720 | 102.3 | 407,909 | 89.5 | 497,675 | 88.1 | 8,224,304 | 100.6 | 1,917,134 | 4.29 |
| May | 7,601,680 | 102.9 | 437,006 | 92.9 | 525,321 | 90.0 | 8,564,207 | 101.4 | 1,933,230 | 4.43 |
| June | 7,222,185 | 100.9 | 406,944 | 89.3 | 514,101 | 90.9 | 8,143,230 | 99.6 | 1,898,189 | 4.29 |
| 2nd Qtr. | 22,142,785 | 102.0 | 1,251,859 | 90.6 | 1,537,297 | 89.7 | 24,931,941 | 100.5 | 1,916,367 | 13.01 |
| 1st 6 Mos. | 42,175,530 | 97.7 | 2,182,402 | 78.3 | 2,846,660 | 83.5 | 47,174,592 | 95.7 | 1,823,525 | 25.87 |
| July | 7,224,306 | 97.0 | 380,317 | 79.8 | 478,299 | 79.7 | 8,082,922 | 94.8 | 1,828,716 | 4.42 |
| August | 7,318,908 | 98.0 | 405,118 | 84.8 | 518,146 | 88.1 | 8,242,174 | 96.5 | 1,860,536 | 4.43 |
| September | 7,262,359 | 100.7 | 409,216 | 88.7 | 533,422 | 91.7 | 8,204,997 | 99.4 | 1,917,055 | 4.28 |
| 3rd Qtr. | 21,805,573 | 98.6 | 1,194,651 | 84.4 | 1,529,868 | 85.6 | 24,530,093 | 98.9 | 1,868,248 | 13.13 |
| 9 Mos. | 63,981,103 | 98.0 | 3,347,083 | 80.4 | 4,376,529 | 84.3 | 71,704,685 | 96.1 | 1,838,582 | 39.00 |
| October | 7,734,714 | 103.6 | 436,835 | 91.5 | 561,137 | 96.6 | 8,732,686 | 102.4 | 1,975,776 | 4.43 |
| November | 7,111,829 | 98.4 | 370,659 | 80.1 | 540,905 | 92.8 | 8,023,393 | 97.0 | 1,870,255 | 4.29 |
| December | 7,434,863 | 99.8 | 380,011 | 79.8 | 540,437 | 90.0 | 8,355,311 | 98.0 | 1,890,342 | 4.42 |
| 4th Qtr. | 22,281,406 | 100.6 | 1,187,505 | 83.8 | 1,662,479 | 93.1 | 25,131,390 | 99.2 | 1,912,587 | 13.14 |
| 2nd 6 Mos. | 44,086,979 | 99.6 | 2,382,158 | 84.1 | 3,192,348 | 89.4 | 49,661,483 | 98.0 | 1,890,426 | 26.27 |
| Total | 86,262,509 | 98.7 | 4,534,558 | 81.3 | 6,039,008 | 86.5 | 96,836,075 | 96.9 | 1,857,232 | 52.14 |
| 1951² | | | | | | | | | | |
| January | 7,844,982 | 101.4 | 431,725 | 90.4 | 566,460 | 88.3 | 8,843,167 | 99.9 | 1,996,200 | 4.43 |
| February | 6,835,512 | 99.3 | 326,112 | 75.6 | 504,077 | 87.0 | 7,765,701 | 97.1 | 1,941,425 | 4.00 |
| March | 6,059,525 | 104.2 | 408,926 | 85.6 | 602,504 | 93.9 | 6,071,055 | 102.4 | 2,047,642 | 4.43 |
| 1st Qtr. | 22,840,119 | 101.7 | 1,166,763 | 84.2 | 1,673,041 | 95.6 | 25,679,923 | 99.9 | 1,996,884 | 12.86 |
| April | 7,857,161 | 104.9 | 392,472 | 84.9 | 590,888 | 95.1 | 8,840,521 | 103.1 | 2,060,728 | 4.29 |
| May | 8,071,270 | 104.3 | 408,650 | 85.6 | 614,579 | 95.7 | 9,094,499 | 102.7 | 2,052,934 | 4.43 |
| June | 7,667,811 | 102.3 | 403,001 | 87.1 | 588,148 | 94.3 | 8,658,960 | 100.9 | 2,017,939 | 4.29 |
| 2nd Qtr. | 23,596,242 | 103.9 | 1,204,123 | 85.9 | 1,791,615 | 95.0 | 26,591,980 | 102.2 | 2,043,985 | 13.01 |
| 1st 6 Mos. | 46,438,361 | 102.8 | 2,370,886 | 85.0 | 3,464,656 | 92.4 | 52,271,903 | 101.1 | 2,020,561 | 25.87 |
| July ¹ | 7,704,433 | 99.8 | 411,599 | 86.4 | 563,215 | 87.9 | 8,679,247 | 98.2 | 1,963,631 | 4.42 |
| August ² | 7,689,000 | 99.4 | 437,000 | 91.5 | 596,000 | 92.9 | 8,722,000 | 98.5 | 1,969,000 | 4.43 |
| 4th Qtr. | | | | | | | | | | 13.14 |
| 2nd 6 Mos. | | | | | | | | | | 26.27 |
| Total | | | | | | | | | | 52.14 |

Note—The percentages of capacity operated (1951) are calculated on weekly capacities of 1,746,337 net tons open hearth; 107,806 net tons Bessemer and 144,891 net tons electric ingots and steel for castings, total 1,999,034 net tons; based on annual capacities as of January 1, 1951 as follows: Open hearth 91,054,020 net tons. Bessemer 5,621,000 net tons, Electric 7,554,630 net tons, total 104,229,650 net tons.

¹ Revised.

² Preliminary.

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Controls

disposed of every 30 days or accumulation of 1 carload.

Foundries will be permitted to remelt certain of their own materials including defective, rejected or obsolete castings.

Monthly Deliveries Increased

Under an amendment made this week by National Production Authority in Direction 3 to CMP Reg. 1, manufacturers have been authorized to increase from 35 per cent to 40 per cent the amount of their quarterly allotments which may be ordered for delivery in any one month.

This up action does not affect the existing provision which permits manufacturers to buy minimum quantities or carload lots under certain conditions.

No Action on Brass Price Change

Further work is indicated before a specific pricing regulation is developed for the brass and bronze ingot industry.

Members of the industry advisory committee representing this field have met for a second time with officials of the Office of Price Stabilization to discuss a dollars-and-cents regulation, but no definitive action was taken.

The industry is pricing under the General Ceiling Price Regulation, but spokesmen said prices being used by manufacturers generally are under GCPR ceilings.

Young Named to GSA Post

Jess Larson, GSA Chief, officially took over the additional job of Administrator of the new Defense Materials Procurement Agency last week.

His first act was to name Howard I. Young, president of American Zinc, Lead and Smelting Co., as his deputy administrator.

Export Quota Reports Extended

Manufacturers of maintenance, repair, and operating supplies have been granted an additional 15 days to report their quarterly MRO export quotas. New cut-off date is Oct. 1.

Defense Contracts

Announced last week

Heater—California Steel Products Co., Richmond, Calif.

Power control unit—Sperry Gyroscope Co., Great Neck, N. Y.

Concrete mixer—Gilson Bros. Co., Fredonia, Wis.

Air compressor—LeRoi Co., Milwaukee

Ditching machine—Parsons Co., Newton, Iowa.

Gage—U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.

Wheel and brake assy.—Goodyear Tire & Rubber Co., Akron, Ohio

Automatic pilot parts—Westinghouse Electric Corp., Dayton

Starter—Jack & Heintz Prec. Industries, Cleveland

Generator—Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.

Assembly—North American Aviation, Inc., Los Angeles

Transmitter—U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.

Indicator—Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.

Turbosupercharger—Hotpoint, Inc., Chicago

Speed drive—Sundstrand Machine Tool Co., Rockford, Ill.

Indicator—Waltham Watch Co., Waltham, Mass.

Machine—Elgin Tool Works, Inc., Philadelphia

Lathe—Gisholt Machine Co., Madison, Wis.

Meter—Westinghouse Electric Corp., Philadelphia

Watch—Waltham Watch Co., Waltham, Mass.

Inverter—Redmond Co., Inc., Owosso, Mich.

Indicator—Sperry Gyroscope Co., Great Neck, N. Y.

Machinery and equipment—General Motors Corp., Saginaw, Mich.

Machinery and equipment—Consolidated-Vultee Aircraft Corp., San Diego

Signal generator—American Electroneering Corp., Los Angeles

Inverter—Jack & Heintz Precision Industries, Inc., Cleveland

Engine parts—Wright Aeronautical Corp., Woodridge, N. J.

Indicator and transmitter—Ternstedt Div., General Motors Corp., Detroit

Indicator—U. S. Gauge Div., American Machine & Metals, Inc., Sellersville, Pa.

Cranking starter—Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.

Spare parts—Douglas Aircraft Co., Inc., Santa Monica, Calif.

Indicator—Robertshaw-Fulton Controls Co., Greensburg, Pa.

Generator—Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.

Radar equipment—Radio Corp. of America, Camden, N. J.

Machinery and equipment—Boeing Airplane Co., Seattle

Mount—Liquid Carbonic Corp., Chicago

Pump unit—Oilgear Co., Milwaukee

Speedometer—Eclipse-Pioneer Div., Bendix Aviation Corp., Teterboro, N. J.

Wheel assy.—Kelsey-Hayes Wheel Co., Detroit

Crank—B. J. Gillen Co., Berkley, Mich.

Machine—Peninsular Machinery Co., Detroit

Spacer—R. & E. Tool & Gauge Co., Detroit

Circuit breaker—Westinghouse Electric Corp., Philadelphia

Machine tools—Package Machinery Co., Long Meadow, Mass.

Fuse—Lion Mfg. Corp., Chicago

Mine anchors—Flour City Ornamental Iron Co., Minneapolis

Metal parts—Inland Equipment Co., Nashville, Tenn.

Gage chamber—City Tool & Die Co., Muncie, Ind.

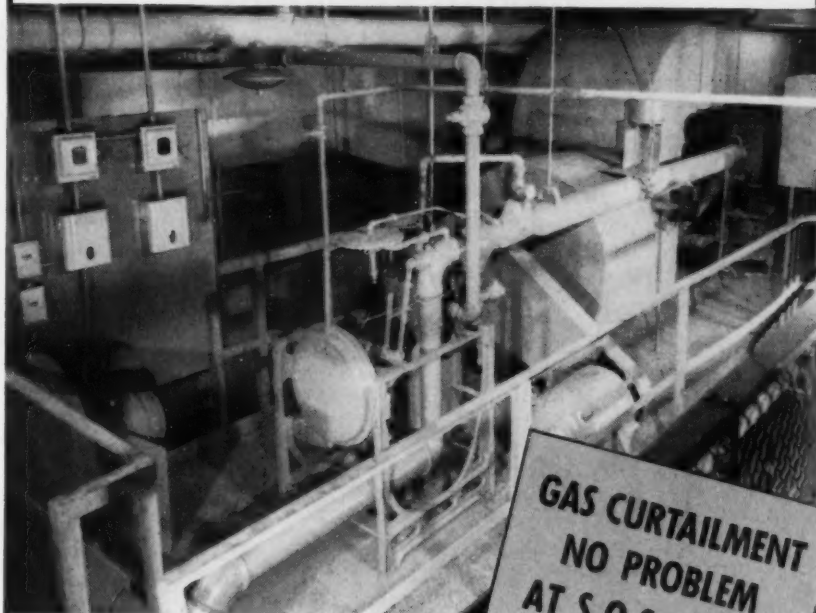
Semitrailer—Trailmobile Co., Cincinnati

Trainer—American Locomotive Co., Schenectady

Diesel engine—Packard Motor Car Co., Detroit

Machine gun—Saco Lowell Shops, Boston

Will You Have Enough Gas This Winter?



THIS OVEN DESIGNED FOR GAS . . . BUT IT'S FIRED WITH OIL BY VAPOFIER

The S.O.S. Company has insured production against losses due to seasonal gas curtailment by installing Vapofier as gas standby. Changeover to and from gas is made without loss of flame at the burners in a matter of seconds. The same piping, burners, automatic controls and safety devices are utilized.

VAPOFIER CONVERTS LIGHT FUEL OIL INTO A GAS

. . . that is suitable for any industrial heating process using a conventional gas firing system. In areas where gas is curtailed Vapofier serves as a standby fuel source and where natural gas is not available Vapofier is used as a primary source of gas fuel.

CAPACITIES FROM 70,000 TO 4,000,000 B.T.U.'s PER HOUR

Should your processing be annealing, galvanizing, heat treating, glass manufacturing, industrial drying, paint, core or bread baking, there's a Vapofier to fit your needs.

Do away with Gas shortages this winter. Send for FREE booklet "Make Your Own Gas With Vapofier".



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Gentlemen: Please send me without cost or obligation free booklet "Make Your Own Gas With Vapofier".

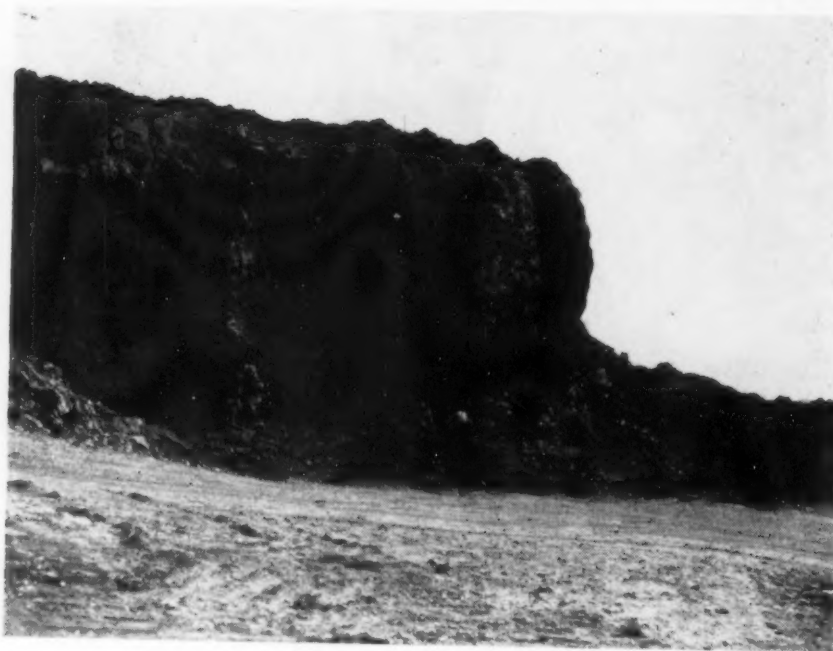
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Itabira Iron Ore for Open Hearth Furnaces



ANALYSIS PERCENTAGES GUARANTEED BY CONTRACT

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|-------------------------------|------|
| Fe (Guaranteed minimum) | 68.5 |
| P (Guaranteed maximum) | .045 |
| Moisture (Guaranteed maximum) | 1.0 |

Recent shipments have averaged about .80% moisture, 69.01% Fe, .028% P and .27% SiO₂. Sizes are half inch to eight inches.

Steel companies now using ITABIRA IRON ORE as charge and feed ore report substantial savings in operating costs. These result principally from absence of impurities, low moisture, high iron content and hard structure.

Important economies in steel scrap have also been achieved in open hearth operations by using higher percentages of Itabira Ore in the charge.

Inquiries should be addressed to the Vale do Rio Doce Agency, Room 1611, 63 Wall Street, New York 5, New York.

COMPANHIA VALE DO RIO DOCE S. A.

Rio de Janeiro

Brazil

Subcontracting

Stratojet Parts Contract Let

Solar Aircraft Co., San Diego, has received an \$8,000,000 order from Packard Motor Car Co. for parts for the J47 turbojet engine. The engine is used in the Boeing B-47 Stratojet and other planes.

Among the parts Solar will build are aft frames, exhaust cones, and linings for both inner and outer combustion chambers. The bulk of the order will be produced at the company's new Wakonda plant in Des Moines.

Housing to Beat Govt. Goal

In spite of credit regulations and materials shortages, housing starts during the first 8 months have exceeded any other comparable period except 1950. Starts so far this year are reported at 758,500.

With August starts standing at 85,000, a slight increase over July, it appears that the 1951 new dwelling units will reach or exceed 1,000,000 as against the 850,000 goal planned by the government at the beginning of the year.

Branch Offices Save \$2½ Million

Decentralization of disbursing offices is saving the Air Force more than \$2½ million a year in contractors' discounts. Before the establishment of local offices, contractors offered fewer discounts because of frequent delays in payments from the home office at Wright-Patterson Air Base, Dayton.

With the opening of branch disbursement points, the number of discounts offered has risen over 600 pct.

Army Ordnance Places Contracts

During the last week of August Army Ordnance contracts totaling \$19,935,000 were placed with 53 organizations located in the Chicago Ordnance District, according to Col. Robert K. Haskell, district chief. Of the total, \$18,962,000 in awards went to 33 concerns in the northern Illinois-Indiana area.

Financial

Defense Loans:

DPA approves over \$113 million defense emergency borrowings.

Defense emergency loans of \$615,000 to Riverside Foundry, Inc., Bettendorf, Ia., and \$400,000 to the Appalachian Mining & Smelting Co., Embreeville, Tenn., have been approved by Defense Production Administration.

Previously approved applications by the Hazleton Steel & Tubing Corp., Hazleton, Pa., and Nicholson Universal Steamship Co., of Detroit, have been canceled.

For Expansion — Riverside's loan is for expansion of its gray-iron foundry and castings building. A loan of \$175,000 was also approved for the Frohman Mfg. Co., Inc., Miami, to purchase equipment for manufacture of gears and other tank components.

Some 60 emergency defense loans have been approved to date including the recent \$46,000,000 to Harvey Machine Co., for ore boats and equipment for its Kalispell aluminum plant. Total accumulated approvals have passed the \$113 million mark.

Who's Getting Greedy?

Federal excise taxes now exceed the combined Federal revenue from 15 states and two territories, according to statistics compiled by the National Automobile Dealers Assn.

For the fiscal year ended June 30, 1951, automotive excise tax receipts totalled \$1,758,792,663, the association said. This is an increase of almost 30 pct over the previous year.

At present, automotive excise taxes represent 3½ pct of the total revenue collected by the Federal government. They are equivalent to 12 pct of the total corporation and profit taxes or 6½ pct of the total individual income and employment taxes.

The government grabs 29¢ of every dollar spent on an automobile.

HERE'S HELP!

to get
MORE PRODUCTION
at
LOWER COST
with your
PRESENT MANPOWER

PRECISION INSPECTION EQUIPMENT

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| Quality control gages | Automatic gaging, classifying, and segregating machines |
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| Gear burring, burnishing and chamfering machines | Thread and form grinders |
| Micro-Form grinders | Threading machines |
| Crushtrue grinding equipment | Automatic welders |
| | Special machine tools |

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| Solid taps | Self-opening dieheads |
| Collapsible taps | Thread chasers |

CONTRACT SERVICES

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| Engineering and design | Contract manufacturing |
| Dies of all sizes | Forms, threads, precision parts |
| Tooling | Special production machines |

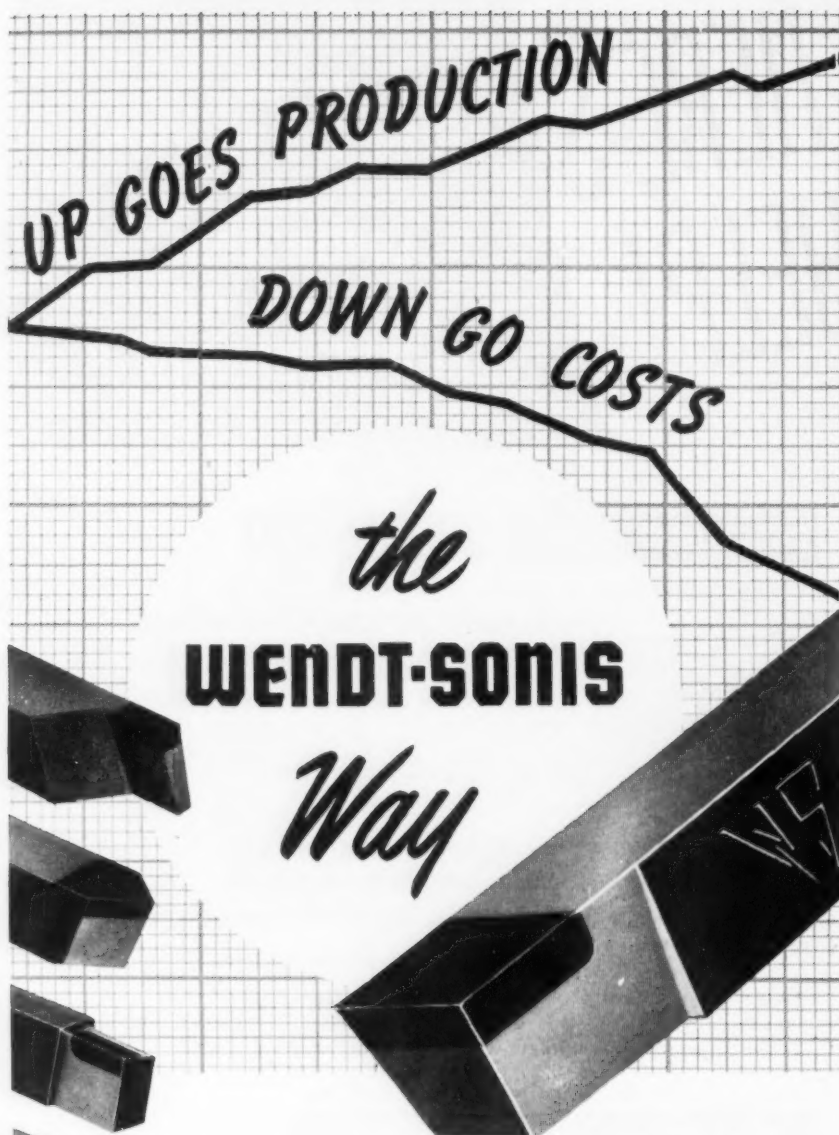
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FREE! NEW CARBIDE EQUIVALENT CHART

Send for new chart showing carbide manufacturers' grade recommendations. Using this chart will bring you better service . . . faster delivery and lower pricing. Write **WENDT-SONIS COMPANY**, Hannibal, Missouri.



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 DRILLS • END MILLS • FLY CUTTERS • TOOL BITS • MILLING CUTTERS • REAMERS
 ROLLER TURNING TOOLS • SPECIAL BITS

International

Metallurgists:

U. S. shares metals knowledge in study tours, world confab.

Study tours of U. S. metalworking by top foreign metallurgists began last week. Main purpose is to exchange techniques to insure proper utilization of free world metal resources.

The 200 visiting scientists, from 21 countries, are delegates to the World Metallurgical Congress, to be held in Detroit Oct. 13-19. Brought here under Economic Cooperation Administration's Technical Assistance Program, they will view metal production methods in more than 100 plants across the country.

Wide Coverage—Arranged by American Society of Metals, sponsors of the Detroit meeting, the tours comprise ECA's largest technical assistance project to date.

Included are steelmaking, refining and fabrication, heat treating, welding and joining, inspection and testing, and metallurgical education and research. Additional tours in nonferrous smelting and galvanizing are planned.

Conference Background—ASM and ECA hope the studies will be a valuable prelude to the discussions at the Detroit meeting.

U. S. industry figures prominent in tour and conference plans include Francis C. Frary, research director, Aluminum Co. of America, Erle G. Hill, metallurgy and development director, Wheeling Steel Corp., and Glen C. Reigel, chief metallurgist, Caterpillar Tractor Co.

Typical of the foreign delegates are Dr. Pierre Van der Rest, general manager, Belgian Blast Furnace and Steelworks Assn., Brussels; Ernest George Thurlby, superintending metallurgist, Defense Research Laboratories, Australia; Alan Harvey Leckie, head of steelmaking division, British Iron and Steel Research Assn., London; and Bengt Kjerrman, director of research, S. K. F., Gothenburg, Sweden.

Construction

Dispersal:

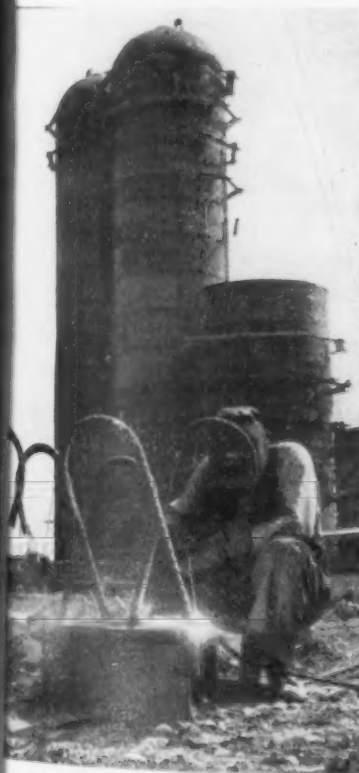
Wilson says administration plan misinterpreted; it's not compulsory

Office of Defense Mobilization is stoutly opposed to pending bills in Congress which would rescind or nullify the Administration policy with respect to plant dispersal.

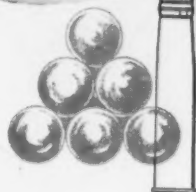
This was made plain in a letter to the Senate Banking Committee in which Mobilization Director Wilson said the dispersal policy had been misinterpreted.

New Plants Only—"It is aimed [only] at dispersing new and expanding industries within local marketing areas," Wilson said. "There is no intention to move established industry."

Yet instructions have gone to government agencies that preference in awarding contracts, making loans, and so on is to be given to firms meeting "satisfactory dispersion" standards.



NEW FURNACE: Anchoring rods are welded to pile caps at U. S. Steel's Fairless Works, Morrisville, Pa. Rods will anchor the cast house foundation for No. 2 blast furnace. No. 1 blast furnace and three stoves are almost completed.



how many man-hours in a cannon-ball?

Many a courthouse lawn still displays those iron balls, once supreme as heavy ammunition. Carefully molded and cast, they took a lot of human labor. Today's war machine uses precision projectiles that explode for maximum effect. These modern cannon-balls are mass produced utilizing press methods, so man-hour requirements are gratifyingly low.

If you make things of metal in large quantities, here's another object lesson. Whether your product is for defense or for civilian needs, Clearing engineers can show you the advantages and economies of press methods of manufacture. Get in touch with us.

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This Clearing press forged projectiles for World War II.



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THE WAY TO EFFICIENT MASS PRODUCTION

NONE BETTER... America's First and Safest

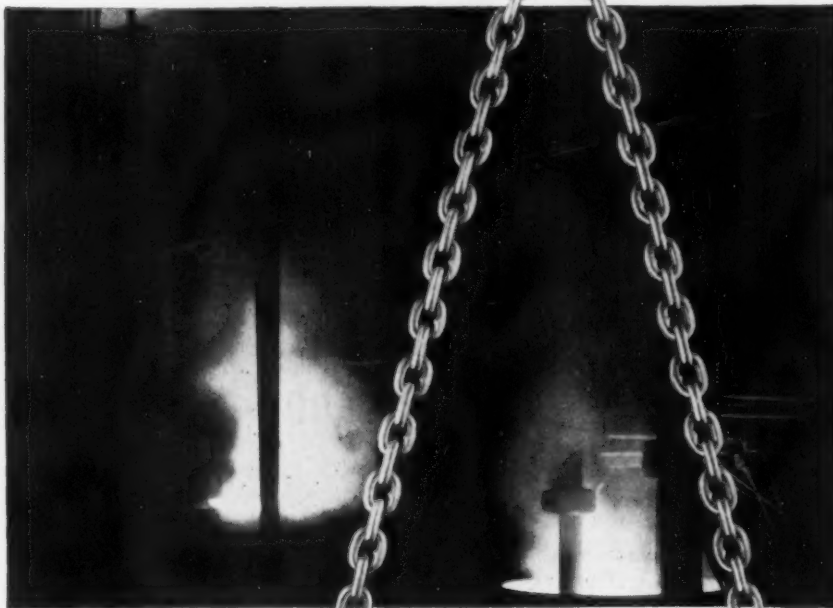
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SLING CHAINS

STRENGTH—Size for size, no other sling chain offers a greater tensile strength. HERC-ALLOY will not crystallize—never requires annealing.

SAFETY—HERC-ALLOY Sling Chains are made to your specifications. Every new sling carries a written guarantee, is registered and tested before shipping. This registration serial number is carried at the top link.

● Serial number permanently affixed near top link for positive identification.



● Identify HERC-ALLOY by the patented inswell side weld with the extra swell of metal on the inside of the link.



EFFICIENCY—Lighter, stronger HERC-ALLOY Sling Chains feature the exclusive short, narrow link design which holds firmer, less tendency to kink, less gouging. Workmen handle HERC-ALLOY with less effort.

PREFERENCE—Men who buy and use sling chains are influenced only by facts learned through experience. HERC-ALLOY Sling Chain preference has been built up over the years, not just by what we say, but by how HERC-ALLOY performs on the job.

Write for Data Book No. 3 which contains much useful manufacturing and application information on HERC-ALLOY Sling Chains.

COLUMBUS MCKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corp.)

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.

District Offices: New York • Chicago • Cleveland

Other Factories at Angola, N. Y., Dixon, Ill., St. Catharines, Ont., and Johannesburg, South Africa.

Construction

Inquiries and Awards

Fabricated Steel Awards this week include the following:

- 626 Tons, Leominster and Lancaster, Mass. Bituminous concrete and steel bridges. Awarded to Bayer and Mangolla Construction Co., Inc., Worcester, Mass.
- 115 Tons, Boston, Mass. Forest Hills overpass and traffic interchanges and approaches over Arborway, New Haven railroad tracks and Metropolitan Transit Authority Elevated railroad tracks. Coleman Brothers, Boston, Mass. Low bidder.

Fabricated Steel Inquiries this week include the following:

- 1062 Tons, Fall River and Freetown, Mass. Bituminous concrete, bituminous macadam and eight bridges including three span steel stringer bridge over Assonet River; two span steel stringer bridge over Main St., Freetown, and two span steel stringer bridge under airport access road.
- 151 Tons, Westfield, Mass., two span steel stringer bridge with concrete deck and bituminous concrete surface.

Reinforcing Bar Awards this week include the following:

- 1800 Tons, Dubuque, Iowa, storm relief sewers, to Laclede Steel Company.
- 1000 Tons, Little Rock, Ark., Arsenal, to Fisher Lime and Cement Company.
- 500 Tons, Chicago, Pioneer Paper Stock Co., and Container Corporation of America, to Joseph T. Ryerson and Sons.
- 245 Tons, Leominster and Lancaster, Mass., bituminous concrete and five steel stringer bridges and one span steel bridge. Martin J. Dalton, Worcester, Mass., district engineer, to Bayer and Mangolla Construction Co., Inc. Completion date, Dec. 15, 1952.
- 185 Tons, Evergreen Park, Ill., Waterworks Improvements, to Truscon Steel Company.
- 160 Tons, Milwaukee, 66th Street school, to U. S. Steel Supply Company.
- 150 Tons, Chicago, Factory addition, Phoenix Trimming Co., to Joseph T. Ryerson and Sons.
- 100 Tons, Kenosha, Wis., Substructure Nash Motor Division, to Worder Allen Company.

Reinforcing Bar Inquiries this week include the following:

- 775 Tons, Chicago, Ill., Chicago Dwelling Assn. Project Number One.
- 650 Tons, Northfield, Ill., Harms Road intercepting Sewer.
- 305 Tons, Fall River and Freetown, Mass., bituminous concrete, bituminous macadam and eight bridges.
- 180 Tons, Chicago, All State Insurance Company.
- 155 Tons, St. Charles, Ill., St. Charles High School.
- 150 Tons, Chamois, Mo., Central Electric Power Corporation.
- 105 Tons, Downers Grove, Ill., William Dwight Herrick Jr. High School.

August Slows Peak Building Rate

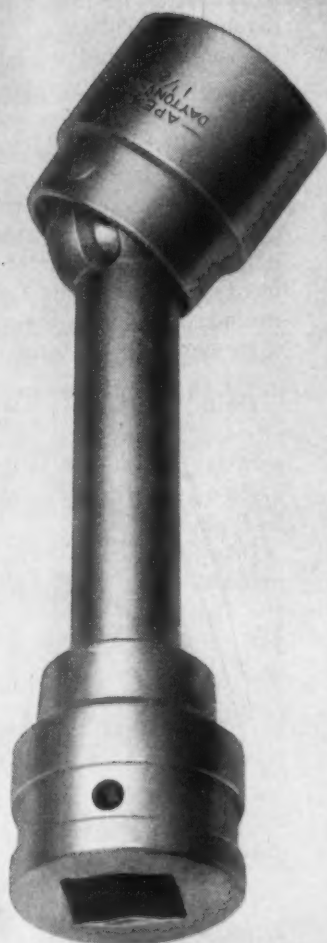
August construction was below both July and Aug. 1950, but this year's 8-month totals are 17 pct. above last year's. Non-residential building so far this year is 52 pct. higher than 1950 8-month totals with residential down 5 pct.

Construction of public and private works and utilities for the same period rose 7 pct. over last year's three-quarter mark.

for HEAVY-DUTY service

APEX

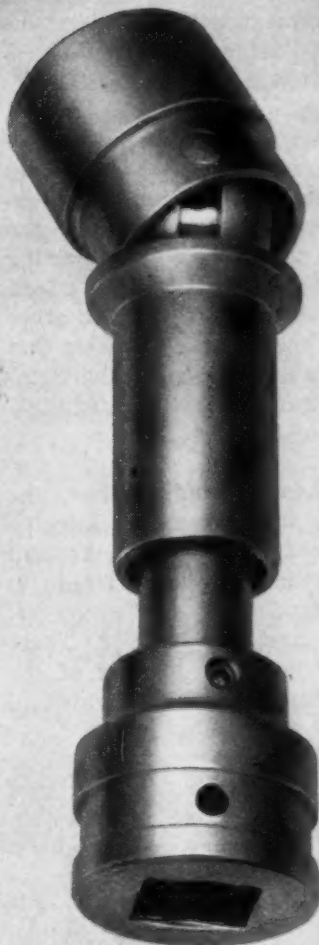
**Extension
Universal
Wrenches**



STANDARD TYPE

In steel mills, power plants and shipyards . . . refineries, railroads and mines—wherever maintenance work includes heavy-duty nutrunning, Apex Extension Universal Wrenches can save time, money and manpower. For working in hard-to-reach spots, specify the Apex tension type, with sleeve-enclosed spring which holds the socket firmly in the extreme angle position, eliminating time-wasting hand positioning of sockets.

Both standard and tension types are available in $\frac{3}{4}$ " and 1" square drive, with broached openings to $2\frac{1}{8}$ " hex, $1\frac{1}{2}$ " square. New Catalog 29, listing more than 5,000 cost-cutting Apex tools, is ready. Write, on your company letterhead please, for your copy.



TENSION TYPE

**APEX
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SAFETY FRICTION TAPPING CHUCKS • VERTICAL FLOAT TAPPING CHUCKS • SELF-RELEASING AND ADJUSTABLE STUD SETTERS • POWER BITS FOR PHILLIPS, FREARSON, SLOTTED HEAD, CLUTCH HEAD, HEX HEAD AND SOCKET SCREWS • HAND DRIVERS FOR PHILLIPS, FREARSON AND CLUTCH HEAD SCREWS • AIRCRAFT AND INDUSTRIAL UNIVERSAL JOINTS • SOCKETS AND UNIVERSAL JOINT SOCKET WRENCHES.

This Week in Washington

RFC to "Operate in Goldfish Bowl"

Agency is getting tough under Symington . . . Legitimate claims will be given fair consideration . . . But political influence is tabu . . . Improve French roads—By George Baker.

Government lending for expansion of defense production is headed for a further tightening-up phase.

Reconstruction Finance Corp., ace-in-the-hole source of operating funds for several hundred thousand business firms during the past 20 years, is quietly putting this get-tough policy into effect, and is passing the word to other federal business-aid agencies that the days of mink-coats and deep-freeze transactions are definitely a thing of the past.

No Loose Lending—For the business firm presenting a legitimate need for funds, loans still will be readily available. W. Stuart Symington, RFC chief, says so. But he adds, significantly: "There will be no loose lending of defense funds under the guise of national emergency."

Symington's 4-month record as RFC boss shows that his declared intention of pulling the scandal-ridden loan agency up by its bootstraps still is in force. "As far as the public is concerned, we're going to operate in a goldfish bowl," he stated when he took office on May 4. And he has adhered religiously to this policy—so far.

Warns Against Fixers—RFC is well aware that its good intentions can be carried out only if political influence—real or alleged—is removed completely from agency operations. To this end, Symington is going out of his way to warn businessmen against "fixers." As long as government loans are transacted on the basis of merit, free from favoritism of any kind,

business firms can safely tell influence peddlers who approach them to drop dead. Or, as Symington puts it:

"I want to issue a warning to people who may be solicited by persons who claim to be able to expedite or accelerate the obtaining of a loan from RFC.

Second Look—"My advice is: Take a long second look at any such person before employing him, because if you do employ him, the RFC will take a long look at him and if there is any suspicion of impropriety, the application will be summarily rejected."

Basically, RFC's house is now in pretty good order. With government money harder to get from here on out, it's up to the politicians—and the business community—to keep their noses clean and resist temptation.

French Roads—Continuing strong demand by the French for



road-building and road-maintaining equipment points up the importance of transportation systems that will bear the weight of heavy military items. Nearly all the munitions furnished the French under Mutual Defense Assistance Program terms are funneled through Cherbourg.

From that port, it's a long way by Continental standards, to some of the installations where the items will be issued. Understandably, the highways need to be strengthened, and Economic Cooperation Administration funds help to finance construction equipment purchases. The French also intend to improve the quality of their concrete mixtures.

Hold Up Loan—Harvey Machine Co. may not get into the primary aluminum business as early as its president, Leo Harvey, had planned.

Interior Dept., which recommended about mid-August that the California firm be granted a \$46 million Reconstruction Finance Corp. loan to build a reduction plant and other facilities, has asked that the loan be delayed. Reason, a government spokesman said, was to give Interior Dept. a chance to restudy Harvey's plans.

Power Study—One phase of the re-examination will be a survey of the amount of electric power available in the Pacific Northwest, where the plants are to be built. Cheap power is the tallest stumbling block to aluminum capacity expansion in the United States.

The Department's request for delay was addressed to both RFC and the Defense Production Administration, which approved the RFC grant. A letter signed by Undersecretary of Interior Richard D. Searles conveyed the request.

Turn Page

TOOLS: Action to Ease Shortage

Munitions Board starts inventory record of Defense Dept. stocks . . . Explores stockpile program . . . Employment up over 50 pct . . . Special draft consideration for industry personnels.

Washington now houses a central inventory record of Defense Dept. machine tools, to be used by any military service having difficulty in getting delivery of new production items.

Operated by the Munitions Board, administration of the inventory will be handled by C. E. MacArthur, for 15 years an executive of Western Machine Tool Works, Holland, Mich. The record will be used to speed up reallocation of those machine tools not in continuous use.

Representatives of any of the three military departments will be able to search the entire catalog to find which tools are available. Any service needing a particular item to break a production bottleneck may draw on the tool reserves of the other services.

Stockpile Program—It is not intended that the inventory be used to meet tooling requirements for entire programs, nor does the Munitions Board view the record as a complete answer to the national machine tool problem. However, the board is considering steps to be taken in preventing a prolonged shortage of this production equipment. Its members are giving attention to a proposal that a long-range machine tool stockpile program be instituted.

Employment Up—Total employment in the machine tool industry probably will reach the 114,000 mark by this time next year, in the opinion of government labor experts. There are no indications at present, however, that total employment in the industry will reach the World War II peak of 123,000 production workers.

Defense Manpower Administration, in a recent report to Mobilization Director Charles E. Wilson

on employment in the critical tool-building industry, finds that the nation's 350 machine tool plants, located in 23 states, employed in May over 50 pct more workers than they did a year earlier.

Special Draft Status—Defense Dept., meanwhile, has issued instructions requiring that special consideration be given machine-tool workers who may be called to military duty as reservists. This "special consideration" is to be applied to workers, apprentices, and those in key managerial positions.

In addition, Selective Service officials have ordered local draft boards to give similar consideration to journeyman workmen, skilled machine operators, and apprentices.

Banks Support Defense Work

Strong support for industries producing defense items continues to be furnished by private banks, the Federal Reserve Board says.

Between September, 1950, and

the end of July, 1951, such banks approved V-loans amounting to \$828,600,000. Such loans are guaranteed in various percentages, amounting to 50 pct or more by the various Federal agencies approved in the Defense Production Act of 1950.

Sixty pct of the defense loans authorized were for amounts under \$500,000, while 20 pct were for varying amounts of less than \$100,000.

Minesweeper Contracts Awarded

Seventeen private shipyards will share in building for the Navy, 26 minesweepers and 42 auxiliary motor minesweepers. Invitations to bid on construction of an additional group of these vessels have been issued to prospective contractors.

All but one of the shipyards receiving awards are in the small-business category. Twelve of them are on the West Coast, four on the East, and one on the Gulf.

Other Orders—Contracts cover construction and outfitting of the 165-ft minesweepers (AM) and the 138-ft auxiliary motor minesweepers (AMS). Certain special items, such as electronics equipment, will be furnished by the Navy, and other auxiliary equipment will come from central procurement agents.

In addition to awarding these contracts, Bureau of Ships has allocated project orders for two minesweepers to Norfolk Naval Shipyard, Va., and for two AMS to Mare Island Naval Shipyard, Calif.

Cahall New Cataloging Official

New deputy director of the Munitions Board's Cataloging Agency is Ralph J. Cahall, industry coordinator of the agency since 1949. A former automotive industry executive, he was wartime administrative manager of the Detroit Tank-Automotive Center. Later he became deputy regional director, in Philadelphia, of War Assets Administration.



Industrial Briefs

Lincoln Awards—As a result of the 4th annual competition of the LINCOLN ARC WELDING FOUNDATION, Cleveland, 63 engineers in 28 different states were recipients of \$5000 in engineering honors and cash awards. Funds totaling \$1750 were also awarded to Purdue University, Lafayette College and Oregon State College, to establish scholarships in honor of, and named for, the engineers receiving the main award.

Cleaning Up — KAISER STEEL CORP., Oakland, Calif., has purchased additional custom-built smoke control equipment that will enhance the company's reputation as having "The Cleanest Steel Mill in the World." New equipment includes an electrostatic precipitator for smoke removal, four waste heat boilers, to be installed in the openhearth department. This equipment costs approximately \$1,250,000.

Establishes Firm—The firm of A. E. CRIPPS INC., located at 55 West 42nd St., New York, has been established to act as the export sales department for a group of associated but non-competitive manufacturers in the engineering, industrial and mill supply fields.

Westinghouse Equipment—Electrical equipment for a new 550-mile crude oil pipe line linking West Texas oil fields with refineries and other pipe lines in east and southeast Texas will be provided by WESTINGHOUSE ELECTRIC CORP. The \$1,160,000 order includes equipment for three pumping stations and provides for 47 motors ranging up to 2000 hp.

Could You Use \$250?—That's the title of an interesting booklet on taxes published by the ECONOMIC PRESS, Montclair, N. J. The booklet illustrates how \$10 million could be slashed from nondefense spending, representing a tax saving of \$250 for each family in the country.

Hear Ye—The name of the Ohlen-Bishop Mfg. Co., Columbus, Ohio, a subsidiary of Rockwell Mfg. Co., has been changed to ROCKWELL TOOLS, INC.

National Service Week—"Proper care means longer wear." This slogan used by HARNISCHFEGGER CORP., Milwaukee, during their National Service Week, is aimed at the users of their equipment to emphasize the need and value of proper and timely maintenance work.

Heads Technical Sessions — One of America's foremost heavy steel, heat treating experts, Glen C. Riegel, chief metallurgist of CATERPILLAR TRACTOR CO., has been named by American Society for Metals to lead foreign and American experts in technical sessions at the World Metallurgical Congress in Detroit, Oct. 14-19.

Something New—A new approach in customer relations was set in motion by BUILDERS IRON FOUNDRY, Providence, when it invited design engineers, production engineers, supervisors, inspectors and purchasing agents to attend a 5-day course in "Foundry Practice and Casting Design." This way the customer learns from the foundry and the foundry learns from the customer.



HARD TO RESIST: One technique used to put over a recent scrap drive conducted by Lyon Metal Products, Inc., Aurora, Ill. Girls gave out cards to employees when sound trucks were passing. "Let's Get In the Scrap" was slogan for drive.

Come On To My House—Recently Cleveland industry has been playing host to employees, friends and neighbors. Guided tours through many mills, railroad yards, foundries, forges and manufacturing plants were arranged, with many companies offering refreshments.

Buys Plant—Purchase of a factory building of approximately 100,000 sq ft working area in Hamilton, Ohio, has been announced by CLEARING MACHINE CORP. The plant was purchased complete with machinery and equipment from Hamilton-Thomas Corp. Plans to erect a plant in Joliet have been abandoned.

New Location — The company of STEDFAST & ROULSTON, INC., which had been located at the same address for 64 years, has moved to 11 Deerfield St., Kenmore Square Section, Boston.

Major Operation — FEDERATED METALS DIV., of American Smelting & Refining Co., will establish a major operation in Birmingham. The company has acquired 30 acres of land near the Southern Railway's Finley Yards and construction is to start as soon as engineering is completed. The cost of the plant, the size of the facility to be built and the scope of operations were not announced.

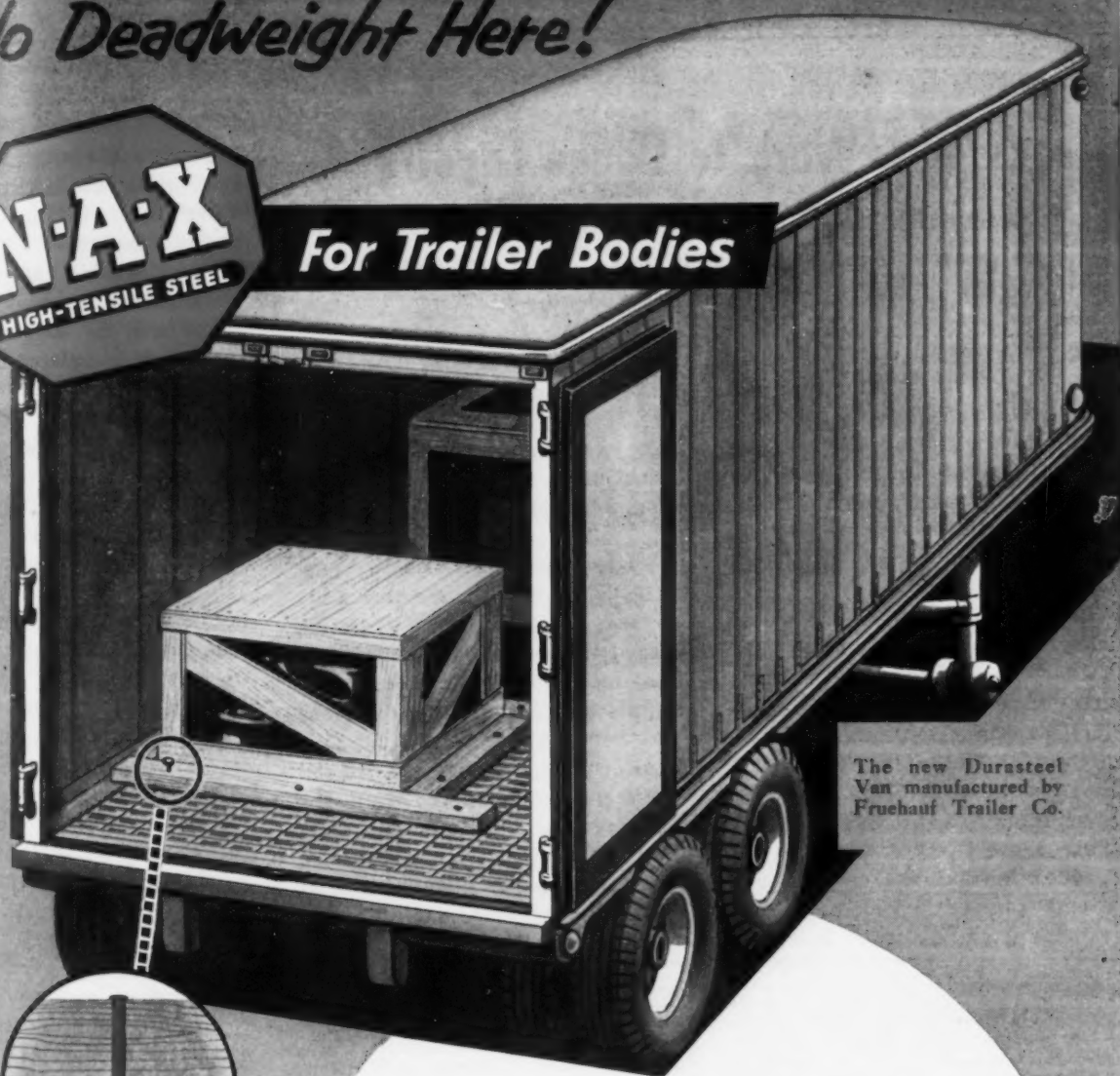
Night School—For the seventh year, HAGAN CORP., Pittsburgh, and its subsidiaries, Hall Laboratories, Inc., Calgon, Inc., and Buromin Co., will continue its plan of defraying part, and in some cases all of the cost of night school courses taken by employees.

End of the Road—The world's largest traveling showcase of electric products—GENERAL ELECTRIC CO.'s now-famous "More Power to America Special" exhibit train—has reached the end of a 28,000-mile road. Workmen at the company's Schenectady Works are now completing the 6-week task of dismantling the silver, 10-car streamliner and its 2001 exhibits of industrial products and techniques for the production and application of electric power.

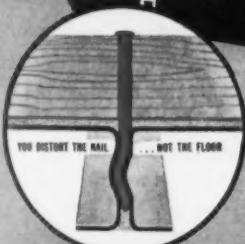
No Deadweight Here!



For Trailer Bodies



The new Durasteel Van manufactured by Fruehauf Trailer Co.



"Great Lakes' Stran-Steel Flooring has high strength and light weight. Its unique nailability permits safe blocking of loads. You distort the nail . . . not the floor."

America's first all-steel trailer body is on the highways—roof, sides, framing and flooring,* all of N-A-X HIGH-TENSILE steel. Years of planning, testing and research went into this unique trailer body, making it the most serviceable ever built.

1. The use of N-A-X HIGH-TENSILE steel in this equipment results in light weight with strength and durability.
2. In addition to greater strength, N-A-X HIGH-TENSILE steel has greater resistance to fatigue, impact, corrosion and abrasion. It offers a greater strength-to-weight ratio with longer life and larger payloads.

More and more of America's highway equipment manufacturers are swinging to N-A-X HIGH-TENSILE steel. Millions of on-the-job miles have proved the superior qualities of this steel . . . have proved its over-all economy.



GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division • Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION



The Automotive Assembly Line

Needs War Work to Dodge Layoffs

GM chief Wilson contradicts idea that auto plants are filled with defense work . . . Pace is slow . . . GM employment is off 30,000 . . . Washington headlines mislead—By Walter Patton.

An announcement last week by President C. E. Wilson that GM must have more defense contracts if it is to avoid mass layoffs comes as no surprise to Detroiters. On the other hand, most people living outside Detroit visualize Detroit auto plants as rapidly filling up with defense work.

This just isn't the case. Defense work is growing but at a slow pace. Wilson disclosed that less than 10 pct of the GM volume is defense work. GM employment is off 30,000. The company has lost the equivalent of \$1,500 million in revenue due to restricted production.

Like other auto makers, GM will attempt to pick up some of its lost income from a price increase.

Each car manufacturer figures out his own price boost according to an OPS formula. Increases will vary with the manufacturer. Most price jumps are expected to range from 5 to 8 pct.

Misleading Headlines — Headlines out of Washington that a big bonanza of war work is being placed in Detroit are misleading. Chairman John D. Small of the Munitions Board has disclosed that between July 1 to Aug. 21 a total of \$388 million worth of defense orders was placed in the motor city. The new contracts cover maintenance, munitions, food, spare parts, construction of tanks, tools, guns, castings and paper products.

BANNER'S OK: American Society For Metals officers approve official banner to be displayed at World Metallurgical Congress, Detroit, Oct. 14-19. Left to right: Dr. John Chipman, head, Dept. of Metallurgy, M.I.T., and ASM president-elect; William H. Eisenman, executive secretary of the society, Cleveland; and Walter E. Jominy, chief metals consultant, Chrysler Corp., and ASM president. The Detroit meeting will be attended by some 4500 metal industry scientists and executives, 500 of whom are coming from 21 foreign countries. Called to discuss conservation and proper utilization of world metal resources, the conference will meet concurrently with the Thirty-third National Metals Exposition.



The trouble with many of these announcements is that this is another case of Washington's "on hand-or-on order" figuring. While a considerable amount of the work called for is being started, there will be long delays until tooling is completed for many of these defense products.

Promising, Anyway — The Air Force has announced prime contracts have been placed in Detroit recently totaling \$109 million. The Navy said its contracts exceed \$60 million and \$34 million more is in sight. The government has also said that by next year Detroit will be in the midst of a special production project so secret that even the subcontractors haven't been told about it yet.

This is all very promising. However, defense production will have to get a move on if it is ever to catch up with declining auto output.

Transmissions — The new metal conservation order effective Oct. 1, limiting the production of automatic transmissions, should be regarded as another "Order of Intention" out of Washington. The maximum percentage of cars priced up to \$1800 to be equipped with automatic transmissions is 35 pct. In the \$1800 to \$2500 price range, 65 pct may have automatic drives. Above \$2500 all cars may have automatic transmissions.

If the order stands, Buick and Olds, in particular, will be hit a smashing blow. To a lesser degree, Pontiac, Packard and Chevrolet will be adversely affected. The order makes little sense from two standpoints: (1) it ignores lead time on steel, (2) transmissions like Chevrolet use practically no aluminum. Best guess is the order will be appealed and the effective date set back.

Pistons — The order forbidding the use of primary aluminum for

pistons is also difficult to understand. Most cars already use pistons made of secondary aluminum. Also, the car makers are set to use cast iron pistons if necessary. (Chevrolet and Pontiac have used cast iron for many years.) Some producers may already have changed to cast iron when aluminum was temporarily short. The catch is this: cast iron pistons cost more than aluminum.

Gas Turbines:

Continental buys U. S. rights to 9 gas turbines developed by French.

The expanding application of gas turbines is indicated by an announcement last week that Continental Motors Corp. has purchased exclusive U. S. manufacturing rights to a family of nine gas turbines developed under sponsorship of the French Air Ministry. The turbines range in horsepower from 200 to 1100 hp.

Military applications of the new units include guided missiles, helicopters, target planes, utility aircraft and air compressors.

Continental expects the new turbines will greatly increase the capacity and usefulness of medium-size utility aircraft used commercially. The company also has in mind applications in industrial equipment.

Advantages — Production will start soon at Continental's plant. Here are some of the advantages claimed for the new turbine units:

(1) 100 pct more favorable power-to-weight ratio as compared to an aircraft piston engine, (2) smaller size in relation to power, (3) uses fuels ranging from all grades of gasoline to crankcase waste, (4) longer life than piston engines, (5) uses fewer critically scarce materials such as columbium, cobalt and tungsten than most present-day turbines.

The 280 hp turbine weighs only 185 lb. This is about one-half as much as a piston engine having comparable output.

Heaters for Cars in South

No one has ever determined whether or not the manufacturer or the dealer is to blame when a car is loaded with accessories. Some companies, including major producers, have adhered strictly to a policy of delivering the car to the customer precisely as ordered.

However, reports continue to come back of cars equipped with heaters delivered to dealers in southern states. The heaters are said to be factory-installed.

The average car buyer is inclined to blame the dealer if a car is loaded with accessories. There has undoubtedly been some factory loading—particularly if the supply of accessories happens to be excessive.

With copper short, with steel short, with aluminum short, this should be a good time for both manufacturer and dealer to adhere strictly to a policy of "no loading" of new cars. Many observers feel

the recent price increases granted car manufacturers takes away the last excuse for loading accessories on an unsuspecting car buyer.

Another Hard-Top Sedan

As most Detroiters expected, Hudson has introduced a "hard-top" sedan. Basic lines are similar to other Hudson models. The new model makes lavish use of chrome. Center posts are eliminated. The new model will be available in the Hornet, Custom and Super-Six Custom series.

Auto Dollar Sapped by Taxes

For every dollar you pay for an automobile 29¢ goes to the government for taxes. This means that on a \$2000 car, about \$584 is for taxes. The automobile industry is spending nearly one-third of its efforts acting indirectly as a tax gatherer for Uncle Sam.

THE BULL OF THE WOODS

By J. R. Williams





"**NO MORE STOOL
STICKERS ... SINCE
WE STARTED USING
NATIONAL GRAPHITE
STOOL INSERTS!"**

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COMPANY FOR INFORMATION.

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BLOCKS • SPLASH PLATES • RUNOUT TROUGH LINERS • MOLD PLUGS • TANK HEATERS**

West Coast Report

Aircraft Orders Force Plant Growth

Warplane production spurts . . . Employment follows suit . . . More plants in prospect . . . Airport borrows to expand facilities . . . Kaiser sees metals shortage—By R. T. Reinhardt.

Contract announced last week under which Kaiser Mfg. Corp., Kaiser-Frazer Corp. subsidiary, will machine aluminum forgings for Boeing's B-52A points up the impact of aircraft construction on western metalworking.

Employment in this industry is climbing to war-time heights.

In California 152,000 are employed, accounting for almost 60 pct of the year-to-year rise in manufacturing employment and for 17 pct of total manufacturing employment which is the largest group included under that classification.

In Washington, where Boeing Airplane Co.'s western plants are located, 29,000 are employed, constituting 15 pct of the total manufacturing payroll.

Second in California — Latest Kaiser aircraft venture is the company's second in California and will be filled at the former Kaiser operated shipyard No. 2 in Richmond which will be leased from the Santa Fe R.R. Operation is scheduled for October after some \$6 million has been spent for tooling.

First was the plant at San Leandro now employing 700 making components for Lockheed's patrol bomber.

As Uncle Sam spreads his wings, western plants must buy newer and more machines; find more fully equipped subcontractors; and expand factory walls.

Boeing Builds — Boeing in Seattle will soon begin construction of an \$800,000 jig-erection building needed for production of the B-52A eight-jet, long range bomber. Additional warehouse space is being constructed by Air

Force for Boeing adjacent to its plant.

Lockheed Aircraft Corp. is to build a \$12.6 million plant 65 miles north of Los Angeles at Palmdale where jet planes will be assembled and is building a \$400,000 hangar. Total employment is expected to run into the thousands. The company expects a small sub-assembly plant at Bakersfield to be in operation next month.

Consolidated Triples — Consolidated Vultee Aircraft in San Diego is busy on modification of B-36's and in production on Convair-Liner



WATER POWER: Exciter housing being positioned on top of 30,000-kva hydro generator. One of three being built by GE for Idaho Power Co., it will be shipped to C. J. Strike hydroelectric development, on the Snake River near Boise, Idaho.

340 transport planes for commercial lines. Employment has expanded three times in 18 months to a total of 18,000 and further enlargement of facilities is "likely," according to company officials. The company's guided missile installation at Pomona which was expected to cost \$50 million will probably check out at nearer \$60 million.

Solar Aircraft Co. at San Diego has a contract from Packard Motor Car Co. for \$8 million for J-47 turbo-jet engine parts with most of the fabrication to be done at its Iowa plant.

Airport Expands — Grand Central Airport Co., Glendale, Calif., has borrowed \$6 million to enlarge facilities for modification and servicing of armed forces aircraft.

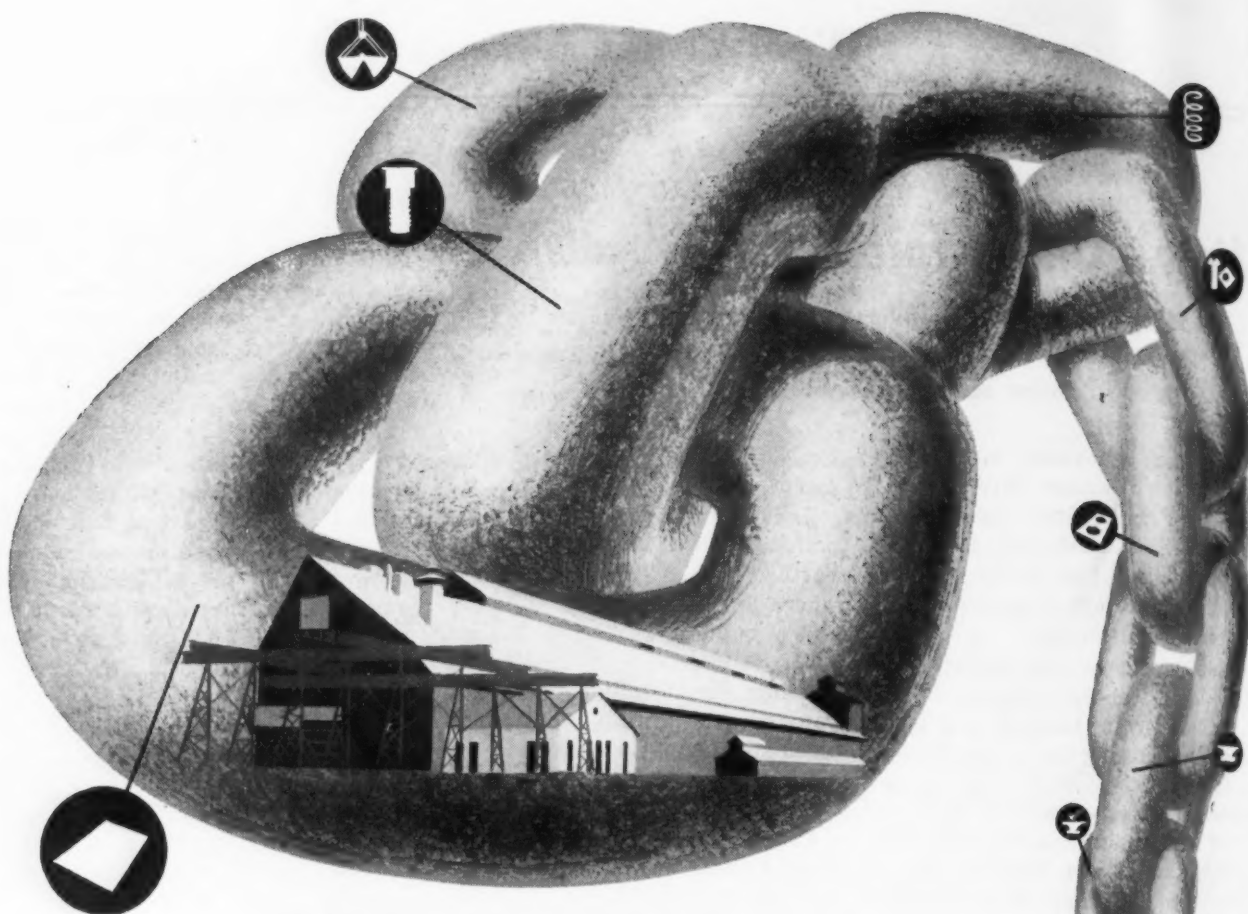
Aircraft Tapered Sheets, Inc., will operate its third western plant in Burbank early next year at capacity to finish aircraft parts.

Aircraft Engineering and Maintenance Co. of Oakland, Calif., has a \$6 million contract for overhauling and maintaining air transports.

Not a Bad Start—At the directors' meeting of Kaiser Steel Corp. Sept. 10, Henry J. Kaiser, president, reported on some of the company's accomplishments in addition to announcing a net income after federal taxes for the year ending June 30, 1951, of \$7,510,560 on net sales of \$100,471,475.

A few were: No. 1 blast furnace at Fontana averaged last month 1327 lbs of coke per ton of iron; No. 2 averaged 1358 lbs (national average was reported at about 1900 lbs); the two blast furnaces produced 11 pct above rated capacity; ingot production during the first 6 months of this year was 30,047 tons above rated capacity; and shipments of finished steel for May, June, July and August of 1951 averaged 81,148 tons.

Mr. Kaiser stated that the West is faced with a shortage of up to 1 million tons of metallics by '53.



STRONG LINK in industry's mighty chain of steel

Plate steel, stampings, and fabrications to meet industry's vital needs pour steadily forth from Barium's Central Iron and Steel Company at Harrisburg, Pennsylvania.

Central is a key link in the chain of fifteen Barium Steel Corporation subsidiaries that provide a single, integrated source of supply for steel in many forms . . . plate, structurals, forgings, stampings, springs, bolts, nuts.

These strategically located companies can completely coordinate operation and output to meet all your steel needs. That's why Barium is better able to help you solve your steel problems.

Put Barium's quality-controlled source of supply (from blast furnace to end product) to work for you. Get in touch with Barium Steel Corporation at 25 Broad Street, New York City.

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GEOMETRIC STAMPING CO. • GLOBE FORGE, INC.
INDUSTRIAL FORGE AND STEEL, INC. • JACOBS AIRCRAFT
ENGINE CORPORATION • KERMATH MFG. CO. • KERMATH
LIMITED (CANADA) • PHOENIX BRIDGE CO. • PHOENIX IRON
AND STEEL CO. • WILEY MANUFACTURING CO.



Machine Tool High Spots

Liberal NPA Allotments Hard to Fill

NPA grants builders allotments for materials needed for defense work . . . But materials are sometimes hard to locate . . .

"Amen" to Senator's machine tool warning—By George Elwers.

The materials situation in the machine tool industry is spotty—critical for some firms, not so for others. Though loud cries arise from the industry, it appears that in general, except for certain specific items, NPA is granting liberal allotments of materials for defense machine tools. And, emergency calls to NPA in specific hardship cases are generally acted on favorably.

NPA seems disposed to grant the machine tool industry just about all the materials it asks for—for defense business, at least. Though there are cases where fourth quarter allocations have been cut, NPA insists that most remain at third quarter levels or have been increased.

Bird in the Hand—But having an allocation from NPA and actually getting the material are two different things. Warehouses, where machine tool builders do most of their buying, are critically short of materials. Getting NPA allocations filled means a constant search of all possible supply sources.

Then there are some steel items used in machine tools not carried by most warehouses—odd sizes and shapes, some of which are rolled by only one mill. These items are particularly hard to get.

Downgrade Alloy Specs.—And, there are specific items where the shortage is so bad even NPA can't help. Plate and certain alloy compositions are examples. NPA warned its machine tool industry advisory committee that much downgrading of alloy specifications is going to have to be done.

All this adds up to the fact that by and large, with NPA help and through hard work and ingenuity, machine tool makers are getting by. But the materials shortages are severe enough to be a brake in rapid production expansion.

Not in Accord?—Head-scratching is in order over Sen. Paul Douglas' (D., Ill.) remarks relating to machine tools while being interviewed on a business-baiting "news" program last week. First the commentator launched an attack on plants built and equipped with accelerated amortization, calling them gifts paid for by the taxpayers. He then introduced Sen. Douglas, seeming to imply the Senator shared these views. But the Senator said no such thing.

He started off by questioning the wisdom of large purchases of machine tools by the armed forces for their contractors. Though title to these tools is supposed to remain with the government, he said, they didn't after the last war. The machine tool industry was dealt quite a blow when many of these

machines appeared on the post-war market at cut prices. To this warning of the Senator's, the machine tool industry will add a firm "amen."

Please Clarify—The Senator then went on to complain that many firms for which tools were to be bought had already received substantial accelerated amortization certificates, and read a list of cases in the aircraft industry where this is so. The question remains, is he against the fast tax writeoff or not?

Much of the present demand for machine tools, as well as much of the cement machine tool production expansion wouldn't exist without fast tax writeoffs.

Completely Automatic—A study of the feasibility of completely automatic factories, made at the Harvard Business School, reveals an interesting thought. There seems no doubt that completely automatic production of single items is possible, where designs don't change often. In fact, such a production line has been built in England, for manufacture of radios. And much auto production is almost fully automatic.

But the Harvard investigators contend that fully automatic production is also practical even where huge quantities of a single design are not made. In such plants, the study says, standard machine tools would be used, tied together with automatic materials handling equipment. Overall system control would be handled by a small digital computer.

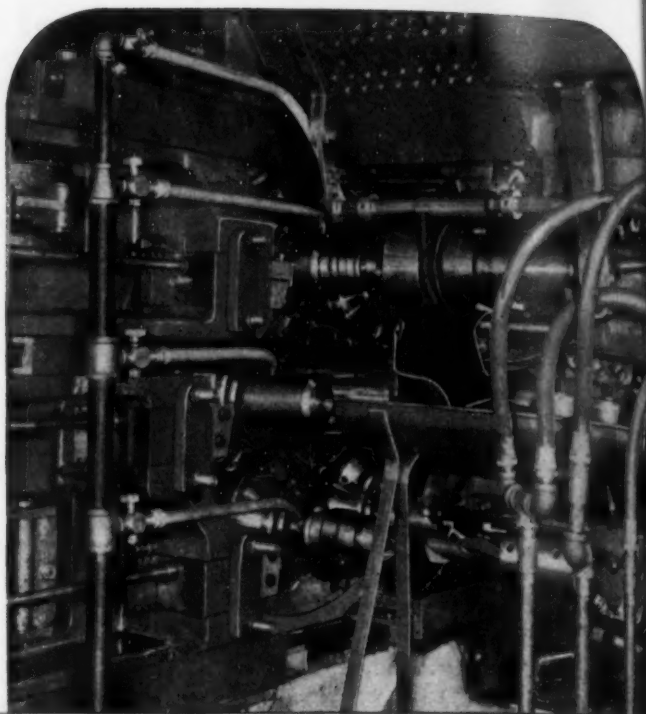
Though the transfer machines used in the auto industry are essentially standard heads mounted on a big materials handling device, the Harvard study apparently suggests going farther. Standard production machines would be used, connected with materials handling equipment and automatic loading and unloading devices.





The main end slide of a 3½-SIX figures prominently in producing the above piece. Its total length is 34½ ins. Its diameter is 12 ins. Its swing for die heads, etc., is 4 ins. The maximum recommended load for the slide is 12,000 foot pounds. Its bearing area is approx. 258 sq. ins.

Front Side of Tooling Area

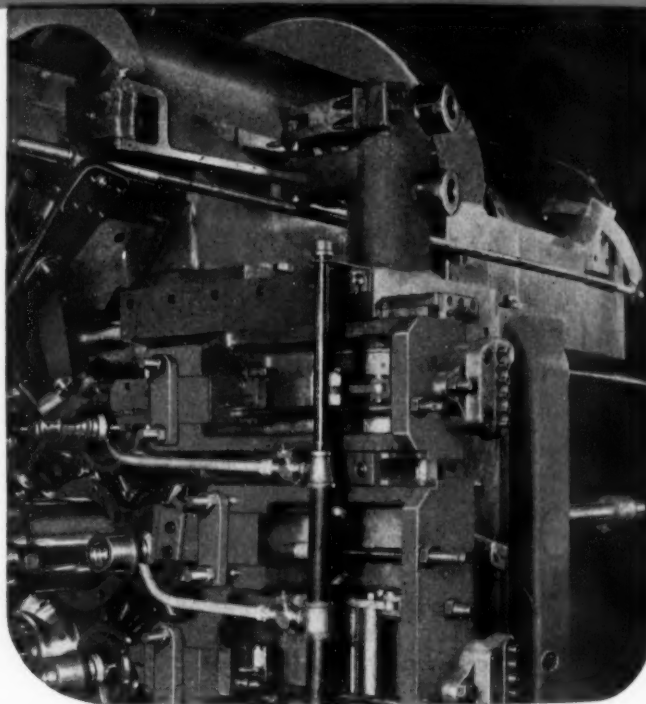


BETTER BEFORE THAN AFTER

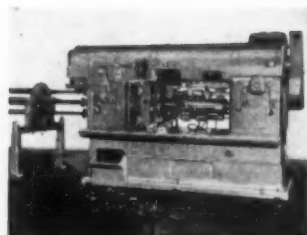
Rear Side of Tooling Area

What an "automatic" does *after* it goes into production is information for which you have already paid a purchase price. How much more you will pay for operation and maintenance costs will determine the completeness and dependability of that information.

It is always better to have complete and dependable information *before* the purchase than after. You can have it on CONOMATICS.



A Comparison of ALL Automatics is in favor of Cone



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The **Iron Age**

SALUTES

Dr. Walther Mathesius

He dreamed of a new steel frontier—the West. . . . Buoyed with faith when others doubted, he made Geneva Steel the vital hub in U. S. Steel's West Coast plans.



IN 1943 Walther Mathesius was called upon to run one of the most controversial plants in the country—Geneva Steel. No one knew for sure whether this huge, sprawling works would bloom like a desert flower, or be the biggest white elephant spawned by the urgency of World War II. Most experts tended toward the latter view.

U. S. Steel built Geneva for the government, and agreed to run it without fee. Because of the controversy, Corporation policy makers wanted an outstanding man to run Geneva. They picked Mathesius.

He already had an excellent job as vice-president, operations, for the entire Corporation. He had built a remarkable record of success since he joined U. S. Steel in 1911 (he still has no thought of retiring).

He was one of the first men to believe in the future of Geneva and he welcomed the challenge to prove he was right.

His record there speaks for itself. He made openhearth men out of PhD's, gained full confidence and cooperation from the Mormons, and cut costs until seasoned steelmen (even within the Corporation) blinked in amazement.

Today, Geneva is the vital hub in U. S. Steel's West Coast operations. Now everyone's on the bandwagon. Many have forgotten the days when Walther Mathesius stood almost alone with his faith and dreams.



Thomas A Edison Cuts Costs in Half with SPEED NUTS®

Edison specifies SPEED NUTS after cost comparisons reveal 50% savings over other militarily acceptable fastening methods.

In the very earliest design stages of their aircraft fire detection relay panel, engineers of Thomas A. Edison, Incorporated, checked various methods of attaching connectors to the panel.

Their requirements were rigid. The fastening means had to be light in weight, resist vibration loosening, provide quick and easy assembly, and be in line on cost. Tinnerman Aircraft Connector Mounting Rings proved to be the only fastener

that qualified on all counts. Connectors are quickly inserted through these mounting rings and the panel.

As for cost, Tinnerman SPEED NUTS turned in the finest record by far! Easily 50% assembly savings over acceptable military substitute fasteners were provided by faster, easier, better SPEED NUTS. Complex or simple, solving fastening problems is Tinnerman's specialty. New booklet, "A Story of Quality", reveals how we can help you. Write for your copy. TINNERMAN PRODUCTS, INC., Dept. 12, Box 6688, Cleveland 1, Ohio. In Canada: Dominion Fasteners Ltd., Hamilton. In Great Britain: Simmonds Aerocessories, Ltd., Treforest, Wales.



The Iron Age

INTRODUCES

A. B. Fisher, Jr., named operating manager, Freyn Engineering department of KOPPERS CO., INC., Chicago. William Croysdale, named manager of the Bartlett Hayward plant, Metal Products Div., Baltimore.

Charles Lively, appointed assistant superintendent of mines for INTERNATIONAL NICKEL CO. OF CANADA LTD.

W. G. Scholl, elected vice-president in charge of sales, Tractor Division, ALLIS-CHALMERS MFG. CO., Milwaukee. Other officers elected: C. W. Schweers, vice-president in charge of sales, general machinery division; J. F. Roberts, vice-president in charge of engineering, general machinery division; and W. A. Yost, vice-president of the general machinery division; G. F. Langenohl, treasurer and appointed assistant secretary; N. D. Johnson, assistant treasurer. E. J. Dietrich and T. D. Lyons were named assistant to the comptroller and works comptroller respectively.

John D. Paulus, appointed director of public relations, JONES & LAUGHLIN STEEL, CORP., Pittsburgh.

Dr. Wendell C. Peacock, elected vice-president and technical director and a member of the board of directors of TRACERLAB, INC., Boston.

Frederick M. Hopkins, Jr., joined CLEVELAND PNEUMATIC TOOL CO., Cleveland, as vice-president and assistant to the president.

B. R. Teece, returned to the WEATHERHEAD CO., Cleveland, as chief engineer of the aviation division.

James W. Murray, joined FABRICATORS STEEL & MFG. CORP., New York, in an executive capacity.

E. M. Barber, elected executive vice-president of PITTSBURGH STEEL CO. and C. H. Lewis will participate actively in the management of the company. Martin J. Bair and George C. Floyd will be sales manager and works manager respectively. Harrison Webb, appointed superintendent of the new strip mill to be constructed at the Allenport Works.

John A. Schultz, elected president of the JERSEY SHORE STEEL CO., Jersey Shore, Pa. Other officers elected: Charles M. Schultz, vice-president; J. D. Quinn, vice-president; J. S. Schultz, treasurer; and P. J. Schultz, secretary.

Jack Kyle, appointed sales manager, Steel Products Div. of the WEST VIRGINIA STEEL & MFG. CO., Huntington, W. Va. Charles Scrivner has been appointed assistant sales manager of the Concrete Reinforcing Bar Div.

Howard J. Moore, appointed plant engineer; Russell Brant, assistant metallurgist; and John W. MacMillan, superintendent of ENGINEERING CASTINGS, INC., Marshall, Mich.

Ransford V. Mann, Jr., appointed Los Angeles district sales representative for the Alloy Tube Div., CARPENTER STEEL CO.

W. C. Newberg, elected president of the Dodge Div., CHRYSLER CORP., Detroit. L. J. Purdy was named vice-president and general manager, truck department. E. C. Quinn becomes vice-president and general manager of the division.

John F. Moriarty, appointed to the newly-created position of sales promotion manager, Replacement Sales Div., of CLEVELAND GRAPHITE BRONZE CO., Cleveland.

Turn Page



FREDERICK NUESKE, appointed master mechanic in charge of tooling of precision instruments, Daco Machine & Tool Co., Brooklyn.

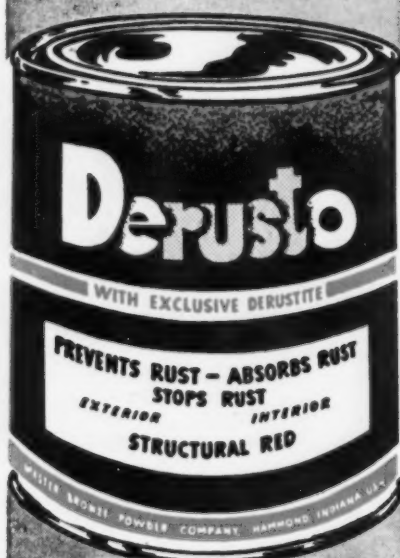


FRANK W. CURTIS, appointed vice-president and chief engineer of the Crescent Metal Products, Inc., Cleveland.



E. WILLIAM KALB, appointed assistant manager, steel sales division, Firth Sterling Steel & Carbide Corp., Pittsburgh.

**For MAXIMUM
PROTECTION
on all METAL
SURFACES...**



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because **Derusto**
PREVENTS RUST
ABSORBS RUST

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DERUSTO comes in standard industrial colors . . . ready for spraying, brushing, or dipping.

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POWDER COMPANY**

5009 CALUMET AVE.
HAMMOND, INDIANA

Personnel

Continued

John P. Stitt, named district sales manager, Cleveland, for **BRAINARD STEEL CO.** **James O. Tavenner** succeeds Mr. Stitt as company representative in the Buffalo district.

R. P. Westerhoff, elected vice-president and director in charge of the engineering department of **FORD, BACON & DAVIS**, New York.

Harlan Olson, heads the Chicago division of **LUCAS-MILHAUPT ENGINEERING CO.**

Willard H. Jones, promoted to production and economic coordinator, magnesium department of the **DOW CHEMICAL CO.**, Midland, Mich. **Dan Chapin** was named to the magnesium sales group of the Cleveland office.

H. C. Hoy, appointed manager of sales, Denver, for **AMERICAN STEEL & WIRE CO.** **Thursman Haskell**, named special representative in the western area sales department. **Alex L. Gresham** was appointed division metallurgist, standard practices, metallurgical department in the Cleveland office and **Joseph W. Gray** was named as division metallurgist for wire at the Joliet, Ill., works.

Henry A. Sturm, named assistant manager, Boston branch of the **CRUCIBLE STEEL CO. OF AMERICA**.

Charles T. Nevins, appointed to the sales staff of **HEPPENSTALL CO.**, Pittsburgh.

Paul L. Wright, appointed sales manager of the Buffalo plant of **JOSEPH T. RYERSON & SON, INC.**

Orrin R. Broberg, appointed mechanical development engineer by the **LAMSON CORP.**, Syracuse, N. Y.

A. P. Wendland, appointed manager, general service department of the **ELLIOTT CO.**, Jeannette, Pa.

Gilbert I. Clark, appointed project engineer of the **AMERICAN CLAD-METALS CO.**, Carnegie, Pa.

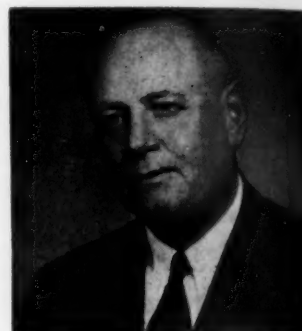
Boyd Carnick, advanced to vice-president of **COPCO STEEL & ENGINEERING CO.**, Detroit.

J. G. Goodwille, joined **A. O. SMITH CORP.** at Milwaukee as industrial safety grating product supervisor.

Louis A. Deringer, named director of traffic and transportation of **ALLEGHENY LUDLUM STEEL CORP.**, Pittsburgh.



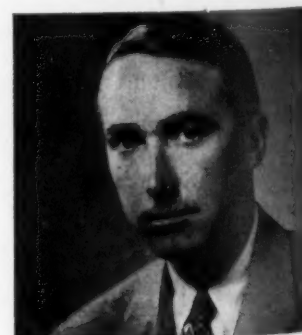
W. CORDES SNYDER, elected president and chief executive officer of **Blaw-Knox Co.**, Pittsburgh.



HARRY L. BRINDLE, recently appointed assistant to vice-president—manufacturing, **U. S. Steel Co.**, Pittsburgh.



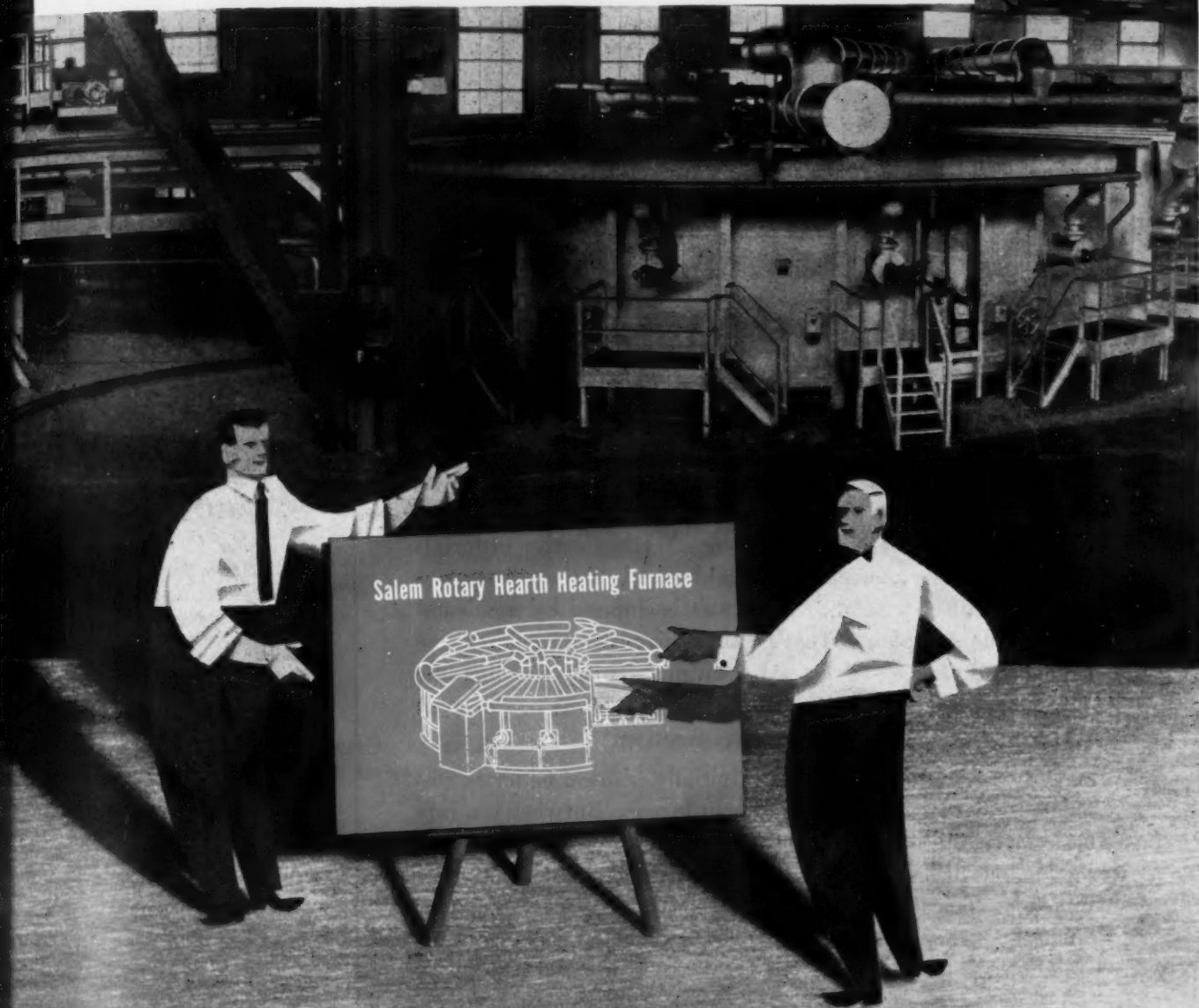
WILLIAM PIERCE, appointed vice-president and technical director, **Allegheny Ludlum Steel Corp.**, Pittsburgh.



ROGER S. AHLBRANDT, who has recently been elected treasurer of **Allegheny Ludlum Steel Corp.**, Pittsburgh.

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Personnel

Continued

Carl C. Kleinschmidt, appointed assistant general manager for WILLIAMS & CO., INC., Pittsburgh. M. C. Young was appointed manager of the aluminum, brass and copper department. E. A. Miller has been appointed manager of the accessory department.

Hugh L. Hamilton, named to manage and direct the activities of A. V. SMITH ENGINEERING CO., Bala-Cynwyd, Pa.

Francis M. Hernan, joined the FRUEHAUF TRAILER CO., Detroit, as assistant comptroller in charge of plant accounting.

Landry Murphy, appointed Louisiana and Mississippi district manager by MARSHALL, NEIL & PAULEY, INC.

George E. McLaughlin, appointed vice-president of the YOUNG STEEL PRODUCTS CO., Youngstown, Ohio.

N. O. Berggren, appointed executive vice-president of the KING FIFTH WHEEL CO., Philadelphia. Mr. Berggren's appointment is for the duration of president A. S. Martin's tenure in the army.

OBITUARIES

Alexander L. Luria, 70, president and director of Luria Bros. & Co., Inc., Pittsburgh. Mr. Luria had been in the scrap business for 50 years.

William H. Wallace, vice-president of the Eaton Mfg. Co., Cleveland, and general manager of the Eaton Spring Division. Mr. Wallace was 64 years of age.

Joseph F. Buhr, developer of the first strictly ball-bearing drill heads and founder of the Buhr Machine Tool Co., Ann Arbor, Mich., at the age of 74.

W. G. James, 61, manager of Large Power Transformer Engineering, Transformer Div., Westinghouse Electric Corp., Sharon, Pa.

Clyde L. Savage, vice-president and general manager of the DuPage Boiler Works, Inc., Naperville, Ill., at the age of 57.

Ray C. Newhouse, retired manager and chief engineer of Allis-Chalmers basic industries department, at his home in Milwaukee at the age of 76.

Harry Richmond, 63, chief engineer at the Electric Steel Foundry, Portland, Ore., until last January.

CONTINUOUS STEEL CASTING PILOT PLANT proves successful



By D. I. Brown
Technical Editor

After almost a century since the first experiments, continuous casting of steel on a commercial scale is nearing reality. The only major problem left is one of supplying the casting machine with sufficient metal to feed a truly continuous process. Rounds up to 7 in. diam and slabs up to 3 x 15 in. are now being continuously cast and used as semifinished products to feed conventional rolling mills. Carbon and stainless steels have been cast with equal success.

Although the continuous casting of metal has been of great interest to engineers and metallurgists for at least a century, its introduction into the steel industry has been painfully slow. Metallurgists and engineers have apparently been engaged in more urgent problems to enable the steel industry to keep pace with social and cultural developments. Parallel with this, they were required to make available continually greater quantities of steel and the fastest solution lay in the direction of larger plants with larger individual production units. Mechanically, these solutions were comparatively easy, despite the fact that they required large financial investments.

These trends brought with them the enormous plants which, eventually may prove not to have been the best plan. While these large production units may have been the solution to the production of the steel quantities in the past, it is now recognized that it might be better if the plants were smaller and more widely dispersed.

The industry has automatically assumed that the way to make more and therefore cheaper products was to create larger units, forgetting that these units brought with them certain weaknesses in flexibility, capital investment, minimum production for economic operation, etc. Hence, no real effort has been made until recently to revise the original casting methods from which the metallurgical products were made, except to make it larger. A basic revision in the conception of the production of castings or ingots has therefore a profound effect upon the entire metallurgical process, not only as to quality and cost of production but also as to the economic size for individual production units and plants.

Continuous casting, a method which can profoundly change steel production, has made greater progress in the nonferrous industry than in the ferrous industry for two reasons. First—the quantities of metal melted and manufactured in a nonferrous plant are much smaller for economic operation than in the steel industry at

present and, second, the temperatures and, the available materials for the melting and handling of nonferrous metals seem to offer a greater range of possibility than for steel. Continuous casting machines, consequently, are in commercial operation at various nonferrous plants in this country and abroad. Notable examples of continuous casting of copper, brass and aluminum were described in the first three articles of this series. The machines have performed an excellent service over the last ten years and are as much a part of the daily production of these companies as are most other pieces of equipment.

Nonferrous heat size no problem

Continuous casting has found easier entrance into the nonferrous industry for another reason which operates against it in the ferrous industry. This is the size of melting units. Experience has shown in the casting of metals that its actual solidification in the mold is a simple matter of trial and change and that all metals lend themselves to the casting of good metal by the Rossi process when the proper combination of cooling, casting speed and mold lubrication has been found. To utilize continuous casting to best advantage, it is not enough to just cast good metal; the casting must be done at the speeds at which the melting units make it available. This adaptation has been fairly simple in the nonferrous industry where the rate of continuous casting was able to keep pace with melting speed, then exceeded it and made possible the introduction of larger melting units with considerable economies.

Steel heat size is too large

In the steel industry this has not been the case except for some steel alloys which are generally melted in small electric furnaces. Casting speeds of 15 tons per hour with steel have already been achieved by the Rossi process and it is not too optimistic to visualize speeds of 30 tons per hour or more when casting slabs with a cross-section of 150 square inches or larger. These casting rates are adequate for the casting of high alloys but not for carbon steel produced by the present openhearth melting furnaces which have capacities up to 275 tons. It is not a reasonable solution to have a series of casting machines running only for short periods of time because the best utilization of continuous casting is to run continuously, as the brass industry does, on a 24-hour basis. The ideal combination appears to be a series of furnaces each of a size which could be cast in an hour with their pouring time staggered accordingly.

With these considerations in mind, it appears logical that Allegheny Ludlum Steel Corporation should be among the first steel companies interested in continuous casting. As a matter of record, the company made an unsuccessful attempt to perfect a continuous casting unit in the mid-

dle 1930's. It undertook adaptation of the Rossi process to the casting of steel in 1949.

In order to test the Rossi process it was decided to use a unit which had been designed for brass as this was the most easily available. Some changes were made to correspond to the difference in pouring temperatures but in the main it was a brass unit. To date, adaptations of the unit have been tested for various steels, stainless and carbon and enough has been learned to consider the process as practicable. A commercial unit is now being engineered. The present unit was located where it would interfere least with the normal production of the plant yet accessible to steel from a 3-ton arc furnace. It can, however, utilize the steel melted by its own induction unit. In either case it has a very limited supply.

The speed of the machine is only about 5 fpm, which was sufficient for brass at the time the machine was built. The new commercial unit for Allegheny should have a top speed of 15 fpm and will cast slabs and ingots with cross sections up to 150 square inches. The machine is being engineered in connection with the new Melt Shop at Watervliet and it will have about 72,000 tons per annum of alloy steel available. The new machine and the Melt Shop will be the subject of a later article in THE IRON AGE after it is in operation.

Process no longer experimental

When the Allegheny Ludlum Steel Corp. decided to install a pilot unit of the Rossi continuous casting process for continuously casting steel, there were many who were skeptical. Today after two years of diligent work the engineers of both the Allegheny Ludlum Steel Corporation and the Continuous Metalcast Company, Inc., have advanced the pilot machine far beyond its original experimental stage. Right now the operation is as close to a truly continuous commercial process as is possible with the equipment on hand.

The machine as originally erected was designed to cast rectangular slabs with cross sections up to 3 x 15 in. and rounds up to 9 in. in diam. The Watervliet plant where this machine is housed produces stainless steels and special alloy steels of all types and much of the experimental work has been along these lines. Stainless steels of the 18-8 group have been cast successfully as well as 12 and 17 pct Cr types and alloy S-816. Carbon steels ranging from 1008 and 1010 to 1040 carbon have been cast with equal success.

Rossi process produces sound metal

Important in the manufacture of steel products is the production of castings having a high degree of internal soundness and cleanliness. The Rossi continuous casting process employs the principle of underpouring in which the metal is tapped from the bottom of a molten bath and introduced into the mold by means of a tubular duct. Since in this method of pouring the metal

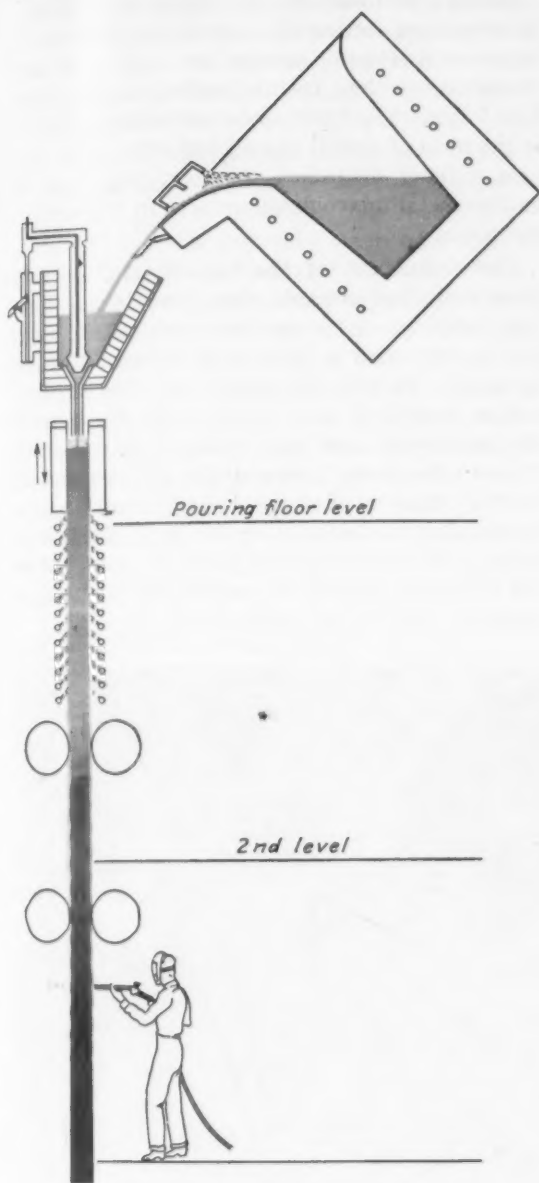


FIG. 1—Schematic sketch of the vertical casting unit used at Watervliet. The holding ladle, tundish and mold are on the top level, pouring floor. The first pinch rolls and water sprays are located above the second level; the cutoff operation takes place on the third level. The cut sections are discharged at ground level and taken away by runout tables.

is not in contact with the surrounding atmosphere and enters the mold with very little turbulence, the possibility of metal oxidation is minimized. It also insures a casting free of slag inclusions. A reducing atmosphere is maintained over the furnace pouring spout, tundish and mold to further protect the molten metal.

In continuously cast billets segregation is held to a minimum because of fast cooling and rapid solidification of the molten metal. The outside skin of continuously cast steel consists of a layer of fine crystals inside of which elongated columnar crystals grow to a central meeting point in round and squares or to an axial line in other rectangles. Most of the heat is extracted radially

or at right angles to the mold surfaces. Consequently in longitudinal cross sections, the crystal boundaries lie at right angles to the direction of casting.

Optimum pouring temperature at Watervliet is about 100° to 150°F lower than the regular steel teeming temperatures used when pouring ingots of the same grade. Carbon steel, 1010, is poured at $2980^{\circ}\text{F} \pm 20^{\circ}$. Stainless, 18-8 is poured at 2780°F and the 17 pct Cr grade at 2825°F . The pouring temperature is somewhat critical but a $\pm 20^{\circ}\text{F}$ spread causes no trouble. Wider variations in temperature would affect the casting speed, however. Too low a temperature, of course, causes the steel to clog up and freeze in the refractory downspout. The heats at Watervliet are poured with the power on the Ajax furnace. This practice helps keep the slag back from the spout, as well as maintaining temperature.

Substantial cut in steelmaking costs

From the standpoint of economy the Rossi machine offers attractive savings over conventional steel making methods. There is an immediate and substantial saving in scrap loss. From end to end the castings are sound and exhibit consistent physical properties. Conventional casting methods sometimes require the use of hot topped ingots which are cut off during final processing. Elimination of ingot scrap derived from conventional methods increases the yield from molten metal to finished casting or semi-finished form, amounting in some cases to 20 pct.

It is estimated that the recovery of good material on the pilot machine varies from 90 pct to 95 pct with some increase expected when adequate metal supplies to the new machine are available. Reduced labor is another factor as surprisingly few men are required to operate the machine. A minimum of three men are required to operate the machine: one furnace operator, one machine operator and one torch operator for cutting off the casting to desired lengths. In the pilot operation, which has no automatic bar removal or furnace power control, extra hands are needed.

The Rossi pilot machine is relatively simple in construction and operation. With the exception of the tundish, or holding ladle, and cut-off mechanism the design of the machine is the same as any nonferrous machine now in production. A flow diagram of metal flow, Fig. 1, shows the delivery of the metal, which has been melted down in a 5000-lb, 1200 cycle high frequency induction Ajax furnace, to a tundish. This tundish deserves some comment as does the tubular duct or downspout.

When casting nonferrous metals the holding reservoir is equipped with a nose piece or section which contains the downspout and needle valve. As the tundish is tilted into the pouring position the downspout enters the mold and casting operations start when the operator opens the

needle valve. The machine is run at a predetermined rate and the metal level in the mold is controlled by opening or closing the needle valve.

Such is not the case in casting steel. If it were, many of the problems of casting steel would have been eliminated at the start, for the solidification of the steel bar is not very different in principle from that of many nonferrous metals.

In casting steel the tundish is the equivalent of a needle valve, as its chief function is to control the flow of steel into the mold.

The tundish, fabricated from steel plate and lined with brick, contains the refractory downspout. Resting on top of the downspout and embedded in the bottom of the tundish is a refractory disk which has an orifice through which flows the molten steel. This orifice acts as a valve passing a given volume corresponding with the static pressure of the molten metal in the tundish. In Fig. 2 a cross section of the tundish and the downspout are detailed.

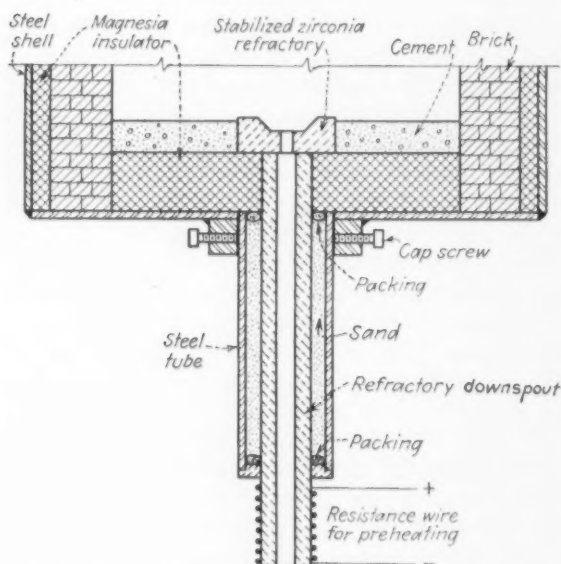


FIG. 2—Cross-section of the bottom of the tundish which is mounted directly above the mold. When pouring the tip of the refractory downspout is immersed in the molten metal head of the mold. A stopper, not shown, fits into the zirconia disk in the bottom of the tundish. Speed of pouring is controlled by adjusting the clearance between the stopper head and the orifice disk in the bottom of the tundish.

The orifice of this disk is chosen to deliver the required volume of steel to the mold at a predetermined level of molten metal in the tundish. Minor variations in the delivery of steel are compensated for as described later on by adjustment of the machine speed.

Sections 3 in. x 15 in. and 9 in. in diam are generally cast at rates varying from 20 to 30 ipm, although the upper limit has not yet been determined. Factors such as type of alloy, pouring temperature, fluidity, freezing range, etc., have some bearing on the rate of solidification and consequently also influence speed of casting.

Smaller sections with a higher ratio of surface to cross section such as $4\frac{1}{2}$ -in. diam round billets and $3\frac{1}{2}$ -in. squares are cast at higher linear speeds than the rectangles, varying from 4 to 5 fpm. The limiting factor is the formation in the mold of a shell of sufficient strength to contain without distortion the ferrostatic head of molten metal unavoidably present in this type of operation.

The downspout of the tundish is fabricated from stabilized zirconia, furnished by the Norton Company. It is approximately 10 in. long, $1\frac{3}{4}$ in. OD with a $\frac{3}{4}$ -in. hole running through its length. To give the downspout added stability a 6 in. length of 2-in. iron pipe is slipped over the refractory tube equidistant from the ends. The annulus formed between the pipe and the refractory tube is filled with quartz sand. Asbestos packing is used to plug the ends. Resistance wire is wound around the lower or mold end of the tube and is used in preheating this section prior to start of cast operations.

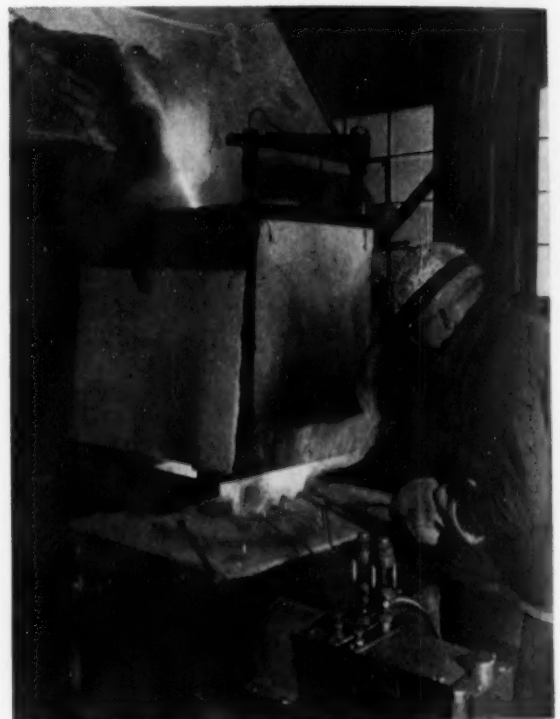


FIG. 3—Molten metal from the holding furnace, top left, is fed into the tundish, center. The top of the mold in front of the operator is obscured by the flames of the burning gases which are used to protect the metal bath in the mold from oxidation during the operation.

In operation the tundish is mounted about 6 in. above the mold with the downspout centered in the mold as shown in Fig. 3. An oil flame is played into the tundish for an hour before casting operations start. No additional heat is required during casting operations.

During casting close teamwork of the furnace and machine operators is required. The furnace operator is located to the left of the furnace and above the casting machine where he has an un-

obstructed view into the tundish, Fig. 4. It is his duty to supply metal from the furnace at a rate equal to the casting rate of the machine and at the same time maintain a constant head of metal in the tundish above the downspout.

No electronic devices for control are used on the machine as it is felt that manual control is superior to a lot of gadgets. The machine operator endeavors to maintain a constant level in the mold through an electrical push button control hook-up to the main drive mechanism which he manipulates to increase or decrease the speed of withdrawal of the solid casting as the level in the mold rises or falls. Thus, in principle the casting of steel is achieved in much the same manner as in the casting of nonferrous metals. When casting steel the speed of the machine is varied to match the metal flow, whereas in nonferrous metals the metal flow is predetermined. From here on the continuous casting of steel is identical to that of the nonferrous metals.

Copper mold is water cooled

The mold is of the solid copper type, 24 in. long, having an internal water cooling system. Water is pumped through the interior of this mold around 120 to 160 gpm. Outlet water is about 12° to 40° F warmer than the inlet water. The mold cavity is chrome plated with 0.005 in. of chromium to withstand the wear of the cast section on the mold wall.

The copper mold does not remain stationary while casting. During casting the mold oscillates parallel to the axis of the casting. The speed of the upward movement is three times the casting rate. In the downward motion, the mold travels with the cast bar at the exact casting speed at which the machine happens to be set. The total travel is only $\frac{3}{4}$ in. but can be varied to 2 in. max.

The movement of the mold is important in the process and is one of the distinguishing features of this process compared to others. Greater cooling rates are possible as the mold is in contact with the cast bar for a longer time than if the cast bar continuously moved past the mold wall. The fast upward travel helps break the mold away from the thin solidified outer skin. The downward motion permits the casting to remain undisturbed against the mold for 75 pct of each oscillating cycle.

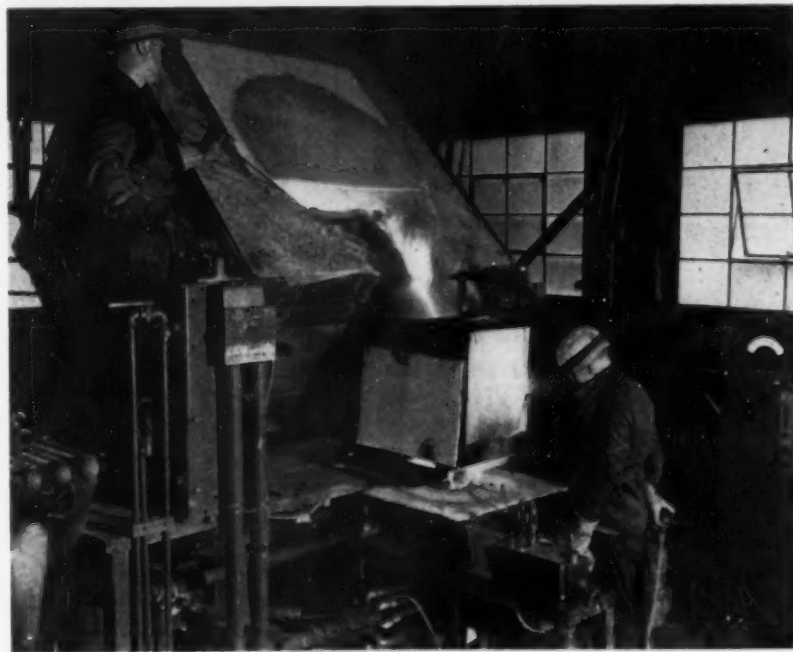
A McCord oil lubricator feeds Rapeseed oil into the mold for lubrication. In addition to its lubrication value, it was found that the Rapeseed oil disperses some oxide globules floating on the molten metal surface in the mold. Propane gas is fed into the mold as well as into the tundish to protect the molten metal from oxidation. A raw flame of city gas is flushed over the pouring spout of the melting furnace as further protection. No carbon pickup has been detected.

The casting is formed in the mold and as soon as the solidified shell reaches a certain thickness it shrinks away from the mold surface reducing friction resistance. At this point it has acquired sufficient strength to prevent fracturing as the casting is withdrawn. The molten metal core contained by this shell varies in depth depending on cross section and casting speed and may be 3 ft or more in depth. As the casting is thus constantly fed until the center solidifies the problem of internal cavities or pipe is obviated.

Additional cooling, in the form of sprays shown in Fig. 5 are located directly under the mold. These may be used to solidify the molten core before it reaches the withdrawing rolls. These sprays are so designed that the intensity of cooling is controlled as desired for each type of alloy or casting size.

Two sets of withdrawing rolls, driven in tan-

FIG. 4—A two-man crew is all that is required on the pouring level. The main control panel for the entire unit is partially visible at right.



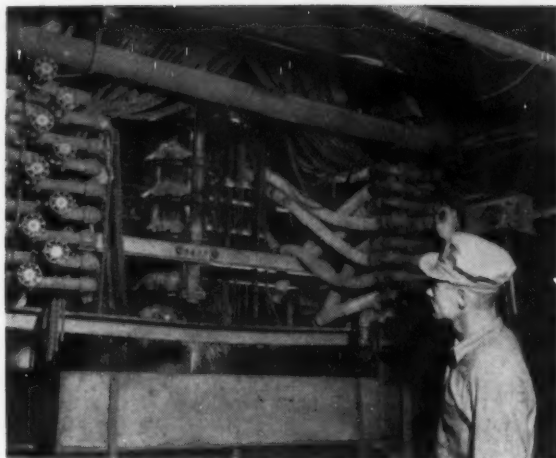


FIG. 5—Cooling sprays located just below the pouring level being used to cool a cast round section. The use of the water sprays is optional.

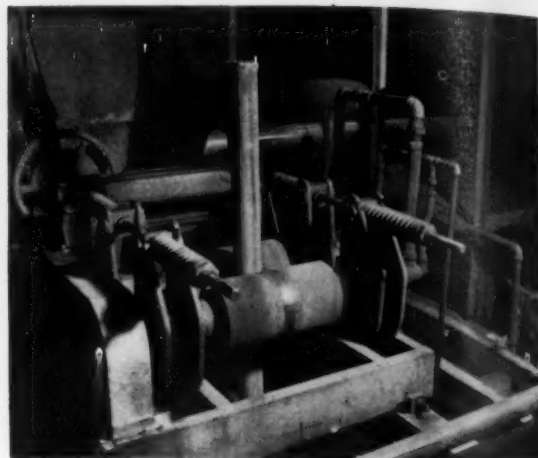


FIG. 6—A cutoff bar shown passing through the pinch rolls on its way to the discharge bucket.

Continuous steel casting (continued)

dem are used to draw the casting downward. These rolls are water cooled as well as the bearings in which they turn. The rolls, shown in Fig. 6, are held by springs against the casting with sufficient pressure to suspend the casting. The mechanism is so designed that the opening

tor then guides the torch through its cut and lifts the whole frame from the descending bar after the cut has been completed. The cut bar falls into a receiver, is tilted onto a roller conveyor and discharged still hot to a mill cart for conveyance either to a reheating furnace for a short period to equalize the heat or to storage.

In connection with the earlier remarks on the



FIG. 7—The cutoff equipment is clamped to the bar and descends with the cast section during cutting.

between the rolls may be altered to accommodate the range of castings desired.

Below the upper set of pinch rolls is the cutoff equipment shown in Fig. 7. A Linde oxy-acetylene torch is suspended from a tubular frame which is light enough for a man to lift. When the cast bar has reached a certain desired length below the rolls, the operator lifts the rigging into place slipping a fork arrangement around the bar. The fork is tilted at an angle of about 20°, and the weight of the torch and rigging clamp the fork to the bar. The opera-

crystal structure of continuously cast material there was at first some skepticism with regard to the anticipated behavior of the cast material when subjected to subsequent mechanical reducing operations such as rolling and piercing.

Stainless slabs 3 in. x 15 in. have been successfully rolled to thin strip with the usual amount of conditioning and grinding. As the casting technique improves much less conditioning is required. The time may not be far away when the slabs will be ready for rolling without any kind of surface treatment.

Hot hardness of plated finishes measured

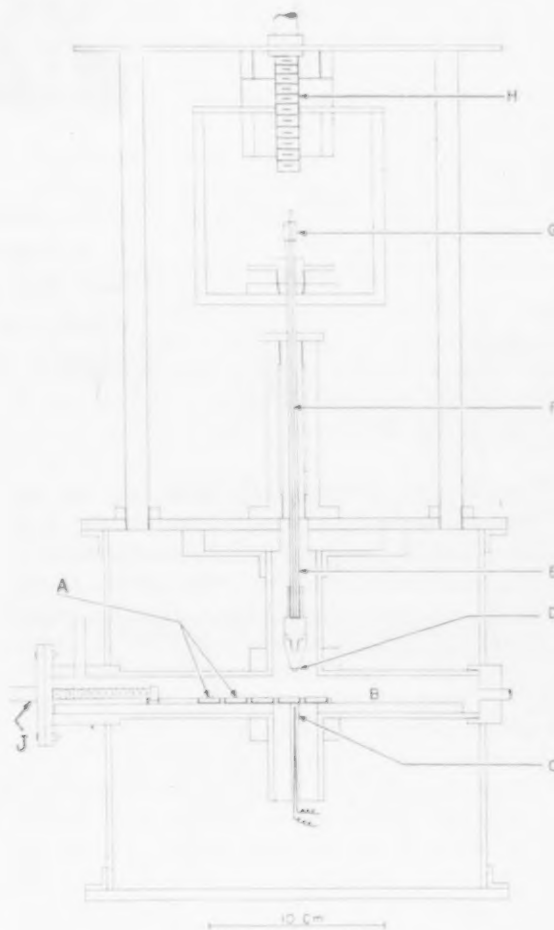
By using a specially designed diamond indenter under very low loads, Abner Brenner of the National Bureau of Standards has developed a device for measuring the hot hardness of electrodeposits. The thinness of such finishes and their softness at high temperatures had imposed special problems in checking this properly. Hardness testing equipment intended for bulk metals were unsuitable, since the contours of the indenters used and the loads applied produced indentations that pierced the coatings.

To eliminate oxide films on the electrodeposits being checked, the furnace in which specimens are heated and tested is charged with an inert gas maintained at a slight positive pressure. By permitting a slow leak past the close-tolerance indenter shaft, air is completely excluded.

A micrometer device locates each specimen under the indenter. This is required because of the microscopic size of the indentations. The travelling microscope used to measure these indentations is set at the same reading

as that on the micrometer when the impression was made.

While suitable apparatus for checking the accuracy of this new hardness testing equipment is lacking, its results were compared with those obtained from a standard type of microhardness test unit operating at room temperature. In four runs (at room temperature, 752°, 1112° and 1472°F), average deviation from mean hardness readings was less than 4 pct.



Specimens (A) are heated in electric furnace (B) consisting of two tubes in form of cross. With specimen on anvil (C), indenter makes pyramidal impression. Indenter shaft (E) is a capillary of fused silica, with a tungsten rod (F) passing through. Rod is held by a collar (G) and set screw. Indenter assembly is raised and lowered by screw mechanism (H), operated by small motor. Micrometer (J) moves specimens past indenter, locating indentation so that it can be easily found and measured later by traveling microscope. Thermocouple in anvil gives furnace temperature.



The microhardness tester developed by the National Bureau of Standards for measuring hardness of electrodeposited coating at elevated temperatures.

How to get the most from your lathes

Chucks,

Air Cylinders,

Automatic Stops.

No. 3 of a series



By John E. Hyler

John E. Hyler & Associates
Peoria, Ill.

Many special chucks, such as one for turning ellipses, are available to increase lathe versatility. Air-operated and magnetic chucks have their advantages. Lathes can be made automatic through addition of duplicating equipment. Air and electric tracers are available. Other devices aid in utilization of boring bars.

Magnetism is often employed at the engine lathe as a workholding force. It is also used for holding certain accessories in position without having to bother with a clamp. Where it is desirable to have a light held close to the point of operation, for instance, lamps with magnetic bases are available. Magnetic-base indicator holders are also available with accessories which permit their use with most of the smaller dial indicators.

Magnetic chucks of rotary type are available for use in making light cuts on small lathes. Their permanent magnets retain their energy indefinitely. Since they do not depend on electric current, there is no danger of work being released and falling in event of power failure.

A handle is used to turn such a permanent-magnet chuck off and on. It turns through about 180° from off to on position. The amount of holding energy can be controlled, however, by giving the operating handle only part of a turn. This allows the face of the chuck to be partially energized. Thus one can hold a piece of work on the chuck while leaving the energy weak enough that it can be moved or tapped into desired position, and thereby centered ac-

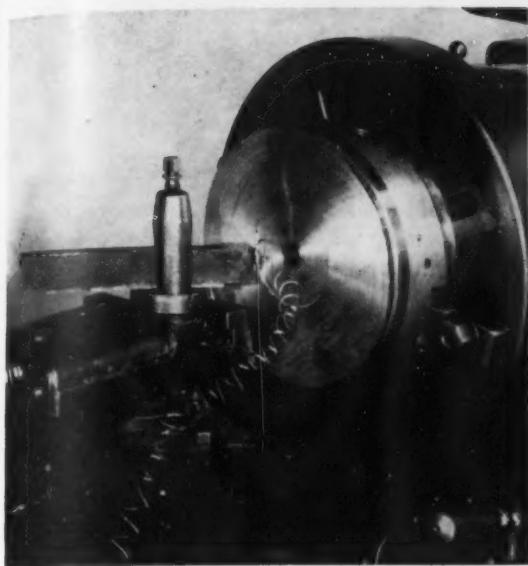
curately. However, the center of the chuck has a tapped hole in a bushing which allows attachment of a button to aid in centering work on the chuck when advisable.

While not recommended for heavy cuts, such chucks are particularly advantageous for holding thin work which cannot be held in the jaws of any ordinary chuck or collet. They also have the advantage that off-center cuts on such work can be arranged and performed with but little trouble. Further, they greatly simplify lathe grinding operations on various types of work.

Auxiliary screws speed chucking

Some three-jaw chucks are now in use which incorporate four auxiliary screws, working opposite one another. These screws are used to bring the work to dead center. The jaws are first closed on the workpiece with a key-operated pinion, just as with any scroll chuck. The same key is then used for operation of the final adjusting screws. Workpieces can thus be centered to within 0.0005 in. within 3 or 4 min by relatively inexperienced operators.

A six-jaw chuck is made on the same general



MAGNETIC CHUCK being used in a dry facing operation. Such chucks can also be used when turning with coolant.

principle, with four final adjusting screws incorporated. Use of six jaws with six resultant contact points on the work allows handling various workpieces by chuck that formerly had to be mounted on a mandrel for turning. Where relatively thin-walled work is being turned, six contact points allow a firm grip to be obtained with less danger of deformation than with a three or four-jaw chuck.

Many lathe owners and operators are unaware of the existence of the so-called oval lathe chuck. The oval chuck is a special device which may be attached to the spindle of the lathe, and which is sometimes bolted with a special bracket to the headstock cover plate, making it very rigid. It is provided with a mounting on its face that will accommodate the same chucks and fixtures which are applicable to the headstock spindle. It also incorporates a sliding mechanism, capable of being set at different values. Work is oscillated while it is being revolved, in such manner that an ellipse is machined on or in the work, instead of a circular cross section.

Used for elliptical work

Using a chuck of this nature, ellipses of varying major and minor axes may be either turned or bored, or both. Molds, dies and punches of elliptical form, or spinning chucks for elliptical silverware or other hollow ware, may thus be directly turned and/or bored.

Air-operated chucks are of different types, but are generally quite simple in construction. They can be applied to many engine lathes with profit. A draw bar actuated by air cylinder is the usual mechanical basis of their operation. One line of air chucks has but four mov-

ing parts, three jaws and a wedge of special form. The wedge angle is small enough that once the chuck firmly grips, regardless of the position of the jaws, it will not release the work again even though the air line is broken, until an actual force is applied on the draw bar in opposed direction.

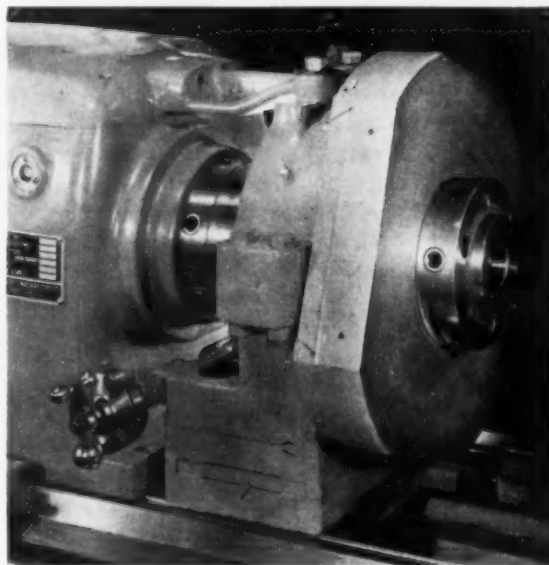
Compressed air has also been found highly useful in relation to lathe practice from certain other standpoints. Some specialists have applied air cylinders to various engine and bench lathes, especially where the machine is to be tooled for almost continued operation on one type of work.

A highly interesting case in point developed at the Kooima Machine Works. Here it was necessary to machine jack shafts in large quantities, drilling a $17/64$ -in. diam hole $1\frac{1}{4}$ in. deep in one end of the shaft, while plunge-cutting a groove around it $1/16$ in. wide and $1/32$ in. deep. A 42-in. Atlas lathe was equipped with a traveling slide like that used by a bed turret, carrying a drill chuck and drill at proper height. This slide was actuated to and from the workpiece by a Bellows air motor. Another air motor was utilized to feed and retract the cross slide on which the plunge cutting tool was mounted. Both air motors were fitted with Hydro-Checks.

Output per operator doubled

By the method formerly used, one operator was able to machine 80 parts per hr, using one machine. With the setup described, one operator keeps two machines busy, it being necessary only for him to load and unload workpieces.

The drill feeds into the work first. When the drill reaches full depth, an adjustable dog on the pressure shaft which operates the drill



OVAL CHUCK, mounted ahead of the lathe spindle, which is used for turning or boring elliptical shapes.

Lathe accessories—(continued)

turret trips the air motor. This brings in the cross slide to make the grooving cut. When the cutting tool reaches depth it automatically returns to normal position and stops, ready for re-loading. One operator is able to produce 200 pieces per hr with this setup. Cross tool tolerances are held more closely, and tool life is increased. The entire layout was so successful that five additional such installations were set up by the same firm.

Another interesting application of compressed air cylinders was found in a case where a record-changer turntable was to be faced in connection with spotting, rough reaming and finish reaming the center hole. The facing was formerly done separately. Now it is done at the same operation by means of an air-fed facing tool mounted on the cross-slide. When the facing operation is handled in this manner, production is 80 pieces per hr, whereas under the older method only 40 pieces could be faced in an hour. The operator places the part in a chuck, and trips a direct-linked valve on the air motor, which feeds the facing tool positioned on the cross slide. He then proceeds to use a tailstock turret to spot, rough ream and finish ream the center hole while the facing cut is being made.

Air tracer attachments popular

Compressed air actuation is also used in connection with certain engine lathe tailstocks. Another application for air is the air operated tracer. This is a form of duplicator which allows multiple-diameter shafts to be turned from a template, or permits contours to be turned, faced or bored as need appears. The template support rail is mounted quite low at the rear of the lathe bed. The tracer-supporting arm consequently extends beneath the workpiece to the rear. This makes it possible to load and unload large or long work with the same ease as on a conventional lathe.

A duplicator of this kind provides a smooth, stepless finish on the workpiece. On some operations it eliminates hand polishing or grinding because of the fine turned finish obtainable. In other cases, it substantially reduces the amount of stock that must be left for finish grinding.

Electric tracer available

Air tracer pressure against the template on such a duplicator is so mild that practically no wear occurs. It is therefore unnecessary to harden the template. Thousands of workpieces may be made from a single template without any appreciable amount of wear taking place.

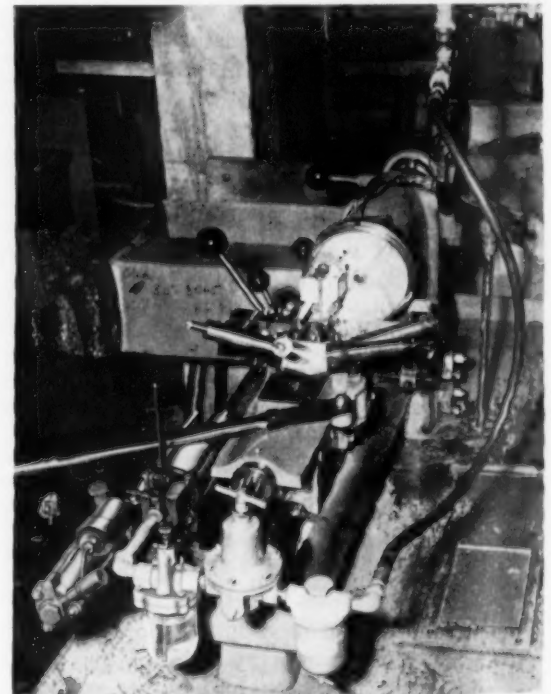
One duplicating attachment used in many places makes a lathe especially suitable for multiple-diameter shaft work. It is operated by an electric motor and controlled by an electric

tracer. It makes a lathe an automatic-cycle machine for duplicating any number of pieces from two on up. Tracing may be done from gage blocks on multiple-diameter shaft work. When tracing can thus be accomplished without making a template, setup time for a job is remarkably short. However, the device will readily trace from a template. When a template is used, the duplicator may be employed for step facing, step boring and such work as tapering, contouring, or machining of radii and chamfers.

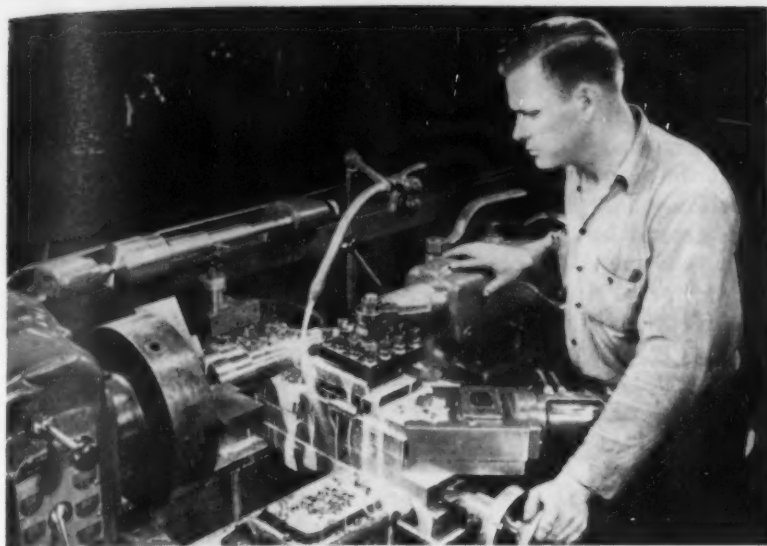
Duplicator utilizes magnetic clutches

Other controls are based on actuation of magnetic clutches. These are capable of tracing and producing many intricately shaped parts. Spinning chucks, form rolls, punches, dies and molds are very often turned with the aid of this type of duplicator. The tracer mechanism incorporates a stylus, which is capable of taking any one of three positions, depending on the amount of pressure the stylus develops against the template. As variations in pressure develop against the stylus due to varying contour of the template, magnetic clutches are energized to operate the rotary motion of both cross and longitudinal screws.

One of the three positions of the stylus causes clutch action to provide feed toward the center line of the lathe. Another causes feed to occur away from this center line. The third position provides feeding action parallel to this center line. The magnetic clutches involved are very fast in their action, nearly instantaneous response allowing very smooth work to be done. Such controls may be disconnected to make a



AIR-CYLINDER feed for cross slide, and tailstock turret, in use on a lathe machining phonograph turntables.



HYDRAULIC duplicating attachment in use on a shaft job. Pattern and tracer are visible in background.

lathe available for operation under manual control when desired.

Many duplicating attachments of hydraulic type can be applied to any standard lathe. Whether required movements of the tool are crosswise, longitudinal, oblique, internal, or external does not matter.

There is an oil reservoir and a hydraulic power unit incorporated in duplicators of this type, for supplying necessary pressure. There is a device for providing power feed from this source, and there is a spindle-and-valve combination, known as a tracer valve, which transmits the shape of the template or pattern accurately to the work. The compound slide used has its action at 45° with the lathe center line. Control over the tool is so sensitive that an exceptional quality of work is obtained in practically all cases.

Tracer controls two compounds

A development in this line is known as a dual follower. A cross slide is employed which carries two compounds instead of one. Each compound is mounted to have its movement at 45° with the center line of the lathe, and at an angle of 90° to that of the other compound. Both compound movements are controlled through a tracer, but the cross and longitudinal travels are obtained with the regular lead screws. Workpieces having contours on their faces, and/or their diameters, can be duplicated.

A lathe using a device of this kind is operated in the regular manner, since none of the regular controls are removed. To change from one compound angle slide to the other, a single change-over lever is provided. While one slide is being used the other is locked in position. This makes it possible to machine square shoulders on both the right and left hand sides of the work, including any undercuts and radii that may occur.

Lathe boring bars and their auxiliaries are

often of great importance. Some boring-bar holders are designed to hold the bar while they are themselves held in a standard toolpost. Other tool holders mount directly on the lathe compound.

Many boring bars provide means for extending the point of the cutter from the bar at an angle of either 90° or 45° , through use of different end caps. Some boring bar holders are of sleeve type and either require a separate holder or bushings to adapt for more than one diameter of bar. There are others which are designed with clamping screws to draw two V-type members together on the bar. A holder of this general type will accommodate boring bars of many different diameters.

Not all V-type boring-bar holders have the two holding members arranged one above the other. One type is designed to mount directly on the compound. Its main body has one horizontal V machined in it. A V-type clamping member approaches horizontally, in true alignment, to clamp the boring bar in place. Any size diameter of boring bar can be used within the capacity of this holder. One nut tightly clamps the boring bar into the holder. Another nut rigidly clamps the body assembly to the lathe compound.

Graduations indicate bore depth

Boring bars provided for use with this particular holder are permanently graduated with circles scribed around them in $\frac{1}{4}$ in. calibrations. This speeds production by readily indicating depth of bore being made, eliminating necessity for making file or chalk marks on bar.

One boring bar holder consists of two cylindrical members with a common vertical axis, pulled together endwise by a clamping screw. The cylindrical members are provided with three different horizontal holes extending through their intersection, 60° apart. The three holes are of different diameters, to accommo-

date three different diameters of boring bars.

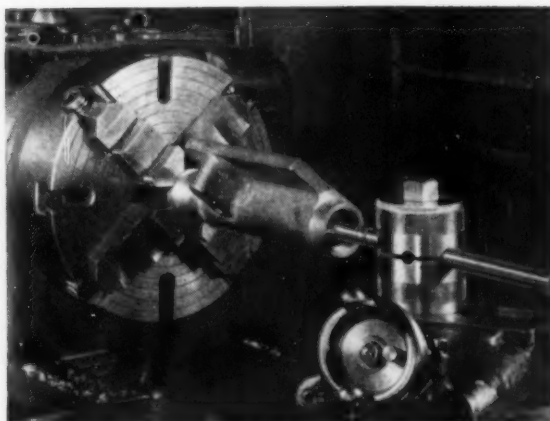
This type of holder is usually supplied with three boring bars of different diameters made to fit it. The three bars are kept at the lathe as a set. A slight turn of one nut releases both the boring bar and its holder. Thus, bars can be changed almost instantly, encouraging the operator to use the stiffest possible bar for any given job.

One design provides a seat for the tool bit in the extreme end of a boring bar. The seat holds the tool at an angle, so it engages and begins to bore before the bar itself touches the work. When this is done and a tool bit is employed which protrudes from the bar only on the cutting end, a larger-diameter bar can be used for boring a hole of given diameter. The cut removed by the bit makes room for the larger-diameter bar to follow.

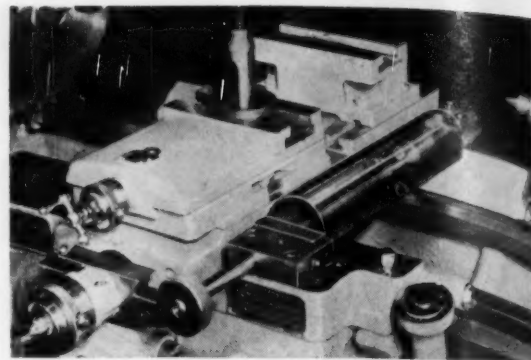
Boring bars made for small holes

While boring bars are generally used for machining holes of fairly large diameter, it is possible to bore very small holes at the lathe. There is a bench-lathe boring tool holder which utilizes bars with a $\frac{3}{8}$ in. shank. There is also an extension lathe bar for very small holes, and there is a set of so-called midget boring bars, the smallest of which is $\frac{7}{32}$ in. in diam.

Where quantity production of duplicate parts is involved, some kind of multiple stop which will automatically govern length dimensions is often important. A bar is often run along the front of the lathe, with stops carefully located on this bar. A stop lever is arranged on lathe apron to engage each stop in turn as carriage travels to the left. Engagement of stop lever at each stop automatically disengages the feed. Various shoulder lengths on work are accurately duplicated in this manner. In some cases



BORING BAR holder mounted on lathe compound. Holder will accommodate three different diameter boring bars, and is arranged for quick interchangeability of bars.



MULTIPLE cross feed stops for repetitive machining of a number of diameters. Stop screws show in phantom view. They are manually indexed by the knob on front of the carriage, and actuated by a dog on the cross-slide.

the apron lever can be held out clear of all stops, when desired, by means of a spring.

Multiple lathe carriage stops are often arranged on some sort of rotary member, which is revolved to bring one stop after another into functioning position. On one lathe, a small indexing cylinder, provided with four or more adjustable stop screws at one end, is attached to the lefthand wing of the lathe carriage. The screws are adjusted to protrude different distances from the end of the cylinder. They engage the end of an adjustable stop pin mounted in the end of a notched positioning bar. The indexing cylinder is provided with a detent plunger. This plunger positively stops each screw in proper radial position to engage the stop pin.

Multiple carriage stops useful

There are devices in which four stops are extended from the outer rim of a special stop wheel. A spring-carrying control rod with its end extended toward the stop wheel travels with the carriage. When the end of this control rod engages the stop, the rod is forced to the right. This action is utilized to snap the half-nut lever to the disengaged position, thus stopping the lathe carriage instantly. Stops on the stop wheel are located 90° apart. They are of different lengths, and are indexed to functioning position in turn, one after the other.

Length reading dials are applied to lathes to permit even more accurate control of carriage movements for depths or lengths of cut. They are useful for highly accurate multiple-diameter turning or boring, and are of particular value when boring blind holes. One such device has gearing incorporated in its housing, and is fitted with two dials.

The dials revolve as the carriage feeds to the left. One foot of carriage travel revolves an inner dial exactly once. The outer dial revolves only $\frac{1}{12}$ as fast as the inner, so that one inch of carriage travel exactly equals one revolution of this dial. The outer dial is graduated in 0.005 in. readings. Both dials can be quickly reset to

zero. Thus it is easy to gage one length or depth directly after another without intermediate computation.

Other appliances are utilized for close control over carriage travel. Actual micrometer carriage stops are sometimes used. These provide only one stop, fitted with a micrometer adjusting dial, graduated to read in thousandths of an inch of carriage travel. There are also cases where a dial indicator is incorporated into a stop-type device. A stop bracket used for these can be clamped anywhere along the front bed V of the lathe. Such a device is often profitable where facing or shoulder cuts must be held within exceedingly close limits.

Stops or other control devices for the lathe cross feed are quite often important. There is an automatic cross feed stop used which provides a single infeed stop. It is used to good advantage for facing operations on a production run. Once engaged and set, it operates automatically to disengage the cross feed at any predetermined diameter with tool slide traveling either in or out.

There is a multiple cross-feed stop which usually consists of a number of adjustable stop screws mounted in the end of a cylindrical member. These stops can be indexed into place, one by one. A dog is used on the cross slide to engage the stop screws, and thus to control diameter sizes. These devices may have 4, 5, or 6 adjustable stop screws. In some cases where a device of this type is used with a rear adjustable tool block on the cross slide, 4 or more additional diameter stops are provided, to control forward feed of the cross slide also. Such a lathe auxiliary is highly convenient for use in connection with multiple-diameter work.

Occasionally an engine lathe is provided with a special, combination, direct-reading cross feed dial. One lathe manufacturer will mount such a special combination dial in place of the standard cross feed dial on the front of the carriage, if desired. This combination dial provides all the ordinary functions of the standard cross feed dial. In addition, it allows reading work diameter directly in inches, also directly in thousandths.

Fork trucks speed shipping, tool handling

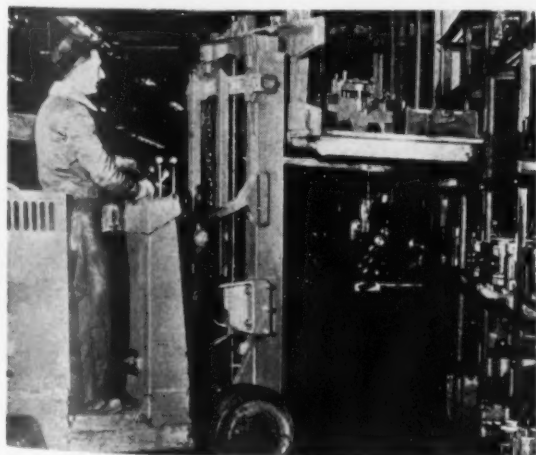
Time and labor-saving methods of handling jigs and fixtures and some of the finished presses that these tools help produce have been developed at the Elizabeth, N. J., plant of American Type Founders. The same skids which are a normal part of packaging of heavy equipment such as printing presses also make it possible to use fork-type lift trucks to move them from one department to another and, finally, right into the trucks or freight cars in which they are shipped.

Formerly, five or six hours were required for two millwrights to get a press into the shipping area or carrier. Rollers were used and an industrial truck did the pushing. With a lift truck,

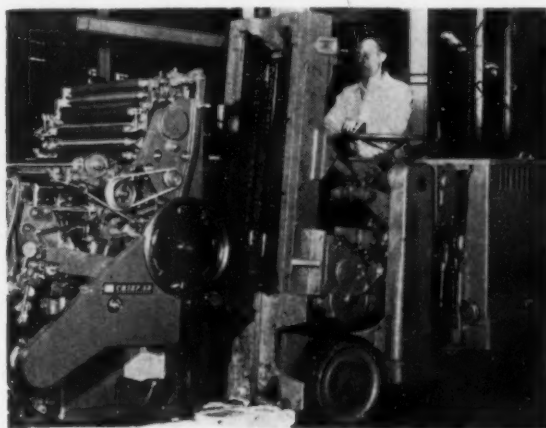
only 10 to 20 minutes are required to pick up the finished equipment, transport it and deposit it in a truck or box car.

By using wooden skids and special steel racks, this plant is now moving heavy jigs and fixtures between toolrooms and production areas without any manual lifting or handling. A lift truck simply inserts its fork beneath a jig's skid and picks it off its storage shelf. The equipment is then moved to the machine where it is to be used in a few moments.

Similar improvements in materials handling have been attained in this same plant involving raw materials, castings and semi-finished parts and assemblies.



JIGS AND FIXTURES are taken from and returned to tool room shelves by lift trucks, "untouched by human hands."



PRINTING PRESSES, weighing tons, used to require hours for moving on rollers into trucks or boxcars. Lift trucks are doing the job in this plant in minutes.

STEAM TREATMENT

increases high-speed tool life

by Herbert Chase

Consultant
Forest Hills, N. Y.



Steam, in a furnace at 1025°F, produces a tightly adherent, hard oxide on cutters, drills, hobs and other tools that avoids or delays the loading causing premature dullness. Pieces per grind have been increased from 45 pct to over 200 pct. Down-time for regrinding has been substantially reduced.

At the Endicott, N. Y., plant of International Business Machines Corp., a steam Homo treatment has been applied to cutting tools of high-speed steel. A thin oxide layer is produced by a Homo furnace, made by Leeds & Northrup Co.. It often increases the output per grind as much as 200 pct, although in some tools, such as hobs, the increase may be only 45 pct.

Naturally, the higher output per grind saves down-time for regrinding and skilled labor for resetting and the regrinding itself, besides increasing the life of the tools treated. These economies are so important that the process is now being applied to all the plant's high-speed steel tools that otherwise would have to be removed and reground at least once during an average run of parts. Treatment is not commonly applied to short-run tools because policy calls for regrinding such tools before resetting for a subsequent run.

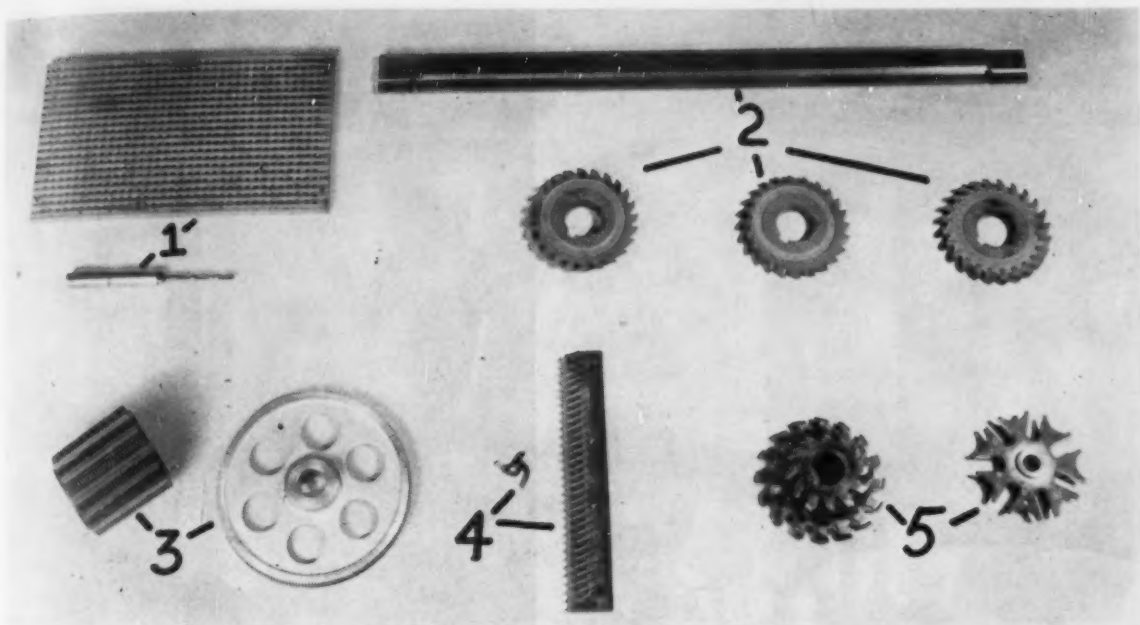
Steam Homo treatment produces a tightly adhering, hard oxide that, in general, is held to a maximum thickness of about 0.0001 in. Thicker layers have been found less satisfactory. Treatment is done in a conventional hot-air recirculating Homo furnace that has been altered slightly to hold steam at 15 psi. The furnace used is of 22-in. ID and 26-in. depth, so that it holds five trays if needed. A gasket is applied to hold the low pressure without leakage.

After the furnace is loaded and closed, its electric heating units are turned on and the temperature is held at 650° to 700°F for about 30 min before steam is turned on. This preheating is done to avoid the red rust which may form on tool surfaces, should steam condense thereon. After applying the steam, the temperature is raised to about 1025°F and held for 30 min. This treatment produces the hard oxide layer.

Tools ground before treatment

Heat is then shut off, the furnace is opened and tools are allowed to cool to handling temperature. The surface obtained tends to avoid or to delay the loading that otherwise would cause the tool to become dull. Tools are always ground before treatment because grinding may remove the protective layer where it is wanted, but some, such as form cutters, usually can be reground two or three times before being re-treated. In other cases, where grinding removes the oxide from the surface or surfaces that need the coating, the tools must be re-treated after each grind.

As the furnace can be loaded to capacity (as long as critical surfaces remain exposed to the steam) it holds a large number of tools. Usually all tools needing treatment that accumulate during the day shift are ground and then re-treated in a 3-hr period at night. Before treat-



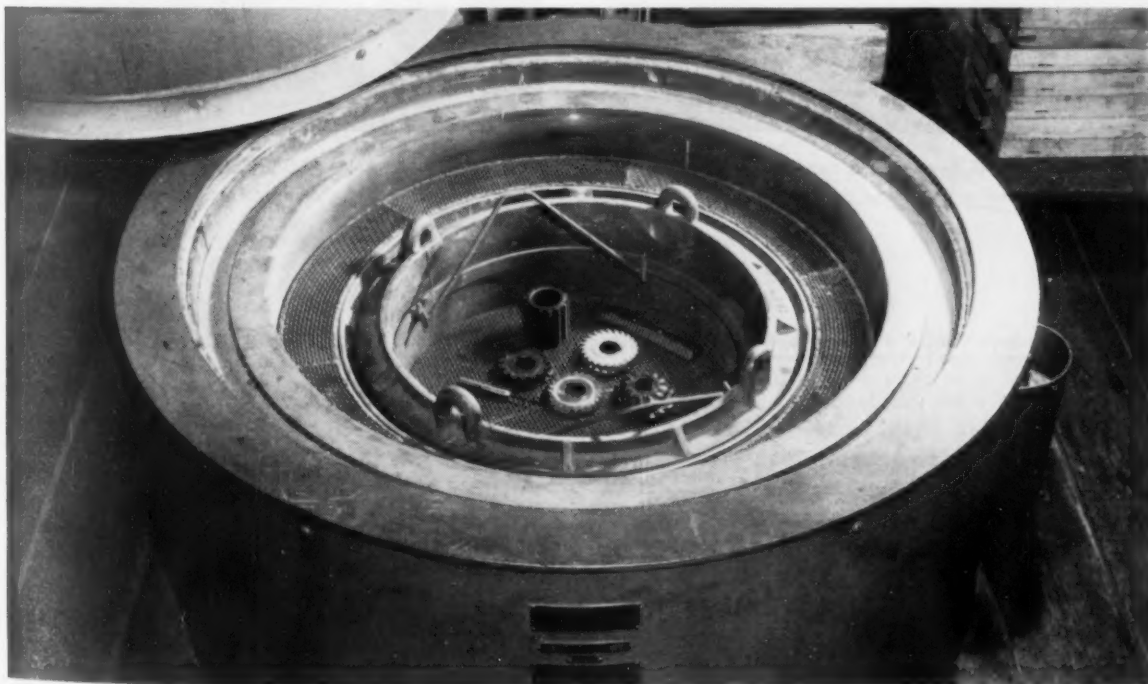
TOOLS AND THE PARTS which are machined by them: 1) Standard drill and the phenolic plate in which are drilled 680 holes; 2) type bar and the cutters used to slot it; 3) standard double-thread hob shown with the gear on which it is used; 4) broach (at right) and hammer latch on which three surfaces must be broached; 5) cutters, together with one of parts which they are used to mill.

ment, however, all tools are thoroughly vapor-degreased in trichlorethylene, as oil and grease prevent the oxide from forming.

For one part of 1020 steel that requires the milling of two slots $21 \frac{15}{16}$ -in. long, special cutters of $3\frac{1}{2}$ -in. diam and, respectively, 0.129-in. and 0.1345-in. wide are used. These cutters made 150 cuts per grind without steam Homo treatment. With this treatment, they average 308 pieces per grind.

In drilling a phenolic terminal plate, $\frac{3}{8}$ -in. thick, a treated drill of 3.6-mm. diam produces 8500 holes per grind or about five times the number for an untreated drill. Results in this case parallel those obtained by the supplier of a similar part who used a special chromium-plated drill.

Slotting of type bars of 1020 steel is done with a milling cutter which must hold a 0.504-in. width within $+0.005$ and -0.000 -in. limits,



TOPMOST of the five trays in a steam Homo treatment furnace is shown with a partial load of cutting tools.



STEAM TREATMENT furnace as it appears when in operation. Five trays of furnace hold large assortment of cutting tools.



CONTROLLING AND RECORDING equipment used with the steam Homo unit to apply hard oxide to cutting tools.

Steam increases tool life—(continued)

the cut being 0.076-in. deep and 0.060-in. long. Before treatment, these cutters did 2000 pieces per grind. After treatment, 7000 pieces.

On another 1020 steel part, a 3½-in. form milling cutter has to make twelve cuts 0.422-in. deep and 12-in. long per piece, or a total of 144 in. per piece. These cutters now mill 45 pieces per grind where, before, they did only 25 pieces.

In the case of certain hobs of 24-pitch and 14.5° pressure angle, used to cut teeth on a AISI 3140 steel forged gear of 5.829-in. OD,

the number of parts per grind was increased to 62.5 pct. On laminated phenolic gears of 4.74-in. pitch diam (also 14.5° pressure angle), hob life was increased 50 pct.

Three surfaces on a part called a hammer latch, of AISI 1010 steel, have to be broached. The broach used before treatment would run 20 hr between grinds. Now, after treatment, it runs 70 hr per grind.

Counterbores are among other tools that benefit from the treatment. In one case, such a tool would cut 540½-in. holes 1.16 in. deep before having to be ground. This tool now produces 650 holes per grind.

Wind tunnel has 5000 mph air speed

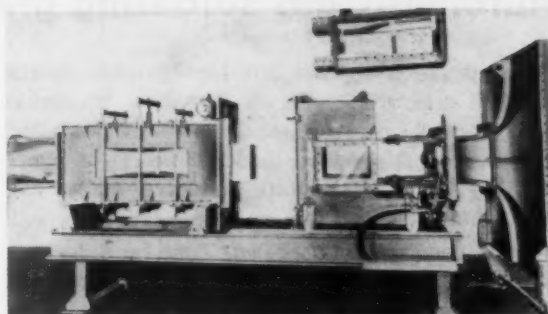
Air speed equivalent to 5000 mph at sea level will be possible in a wind tunnel for supersonic flight research recently built for the National Research Council of Canada. Working section of the tunnel was made at the Lachine Plant of Dominion Bridge Co., Ltd. The tunnel is one of the most advanced yet constructed in Canada.

The equipment works on the air suction principle. Air, drawn through the tunnel to fill the void of a 35-ft diam vacuum sphere, enters the intake throat and is drawn through the nozzle box. The curving shapes of the roof and floor of the nozzle box form a venturi-like nozzle which determines the speed of air flow past the model. Nine interchangeable nozzle boxes each having a different venturi-shape will be used.

Air speed through the tunnel depends on which box is in use. Box No. 1 gives an air speed of Mach 1.4 (1.4 times the speed of sound). Boxes 2 to 6 will give a range of air speeds up to Mach 3.47.

Venturi-shapes for the remaining boxes will be built by the National Research Council. With them, air speeds equivalent to 5000 mph at sea level are expected.

One end of the nozzle box projects into the balance box, where the model is mounted, and which contains apparatus for measuring wind effects on the model. Nozzle box and balance box have optical glass windows, $1\frac{1}{4}$ in. thick, through which shock waves, boundary



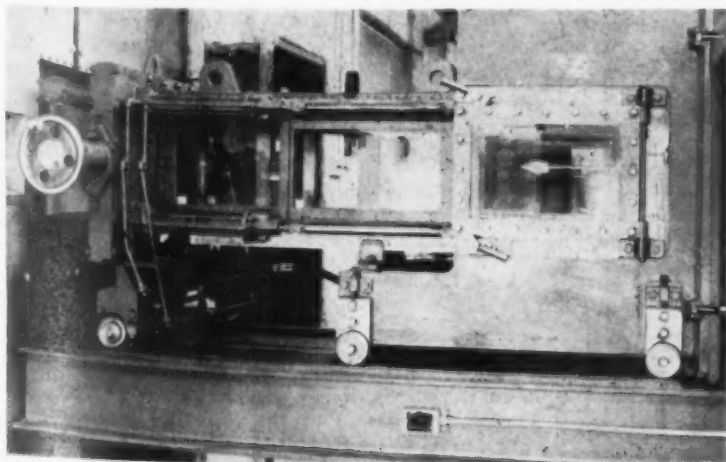
NOZZLE BOXES of wind tunnel may be changed to vary air speeds. Tunnel is shown prior to installation at the National Research Council laboratory.

layers and other flow phenomena can be observed and photographed by means of a schlieren apparatus.

When the nozzle box is removed, the balance box can be moved forward to allow easy access for mounting the model and adjusting balance apparatus. Tunnel cross-section at point where model is mounted is 10 in. sq.

Air leaving the balance box flows through an adjustable throat section in the roof and floor of the tunnel. Aluminum plates can be flexed by a system of screw jacks to change tunnel heights from $12\frac{1}{2}$ to $6\frac{1}{4}$ in. This provides a pressure adjustment inside the balance box (i.e. in the space around the high speed jet) and increases efficiency of pressure recovery. A transition piece transforms the tunnel cross-section from a rectangle to a circle.

A 15-in. diam globe valve will be bolted to the transition piece from which a conical diffuser leads to the vacuum sphere. Requirements were for valves which would withstand 85 psi pressure and 15 psi vacuum, have absolutely leakproof seals, minimum head losses and an opening and closing speed of 1 sec.



MODEL SHOWS working section of wind tunnel at National Research Council laboratory in Canada where supersonic flight research is being made.

Automatic gas soldering gives better, cheaper joints

To improve the quality of pipe to tank joints in oil reservoir tanks of Dynaflo transmissions a new soldering setup has been installed at Buick's transmission plant. Output per operator has more than doubled and silver solder use cut in half.

Until recently, this job was done by induction heating but the inductor coil had to be outside the pipe and close to the end wall of the tank. This caused the tank wall to heat more rapidly than the tube. Silver solder flowed away from the joint and two rings of solder were required where one would suffice if more uniform heating were attained.

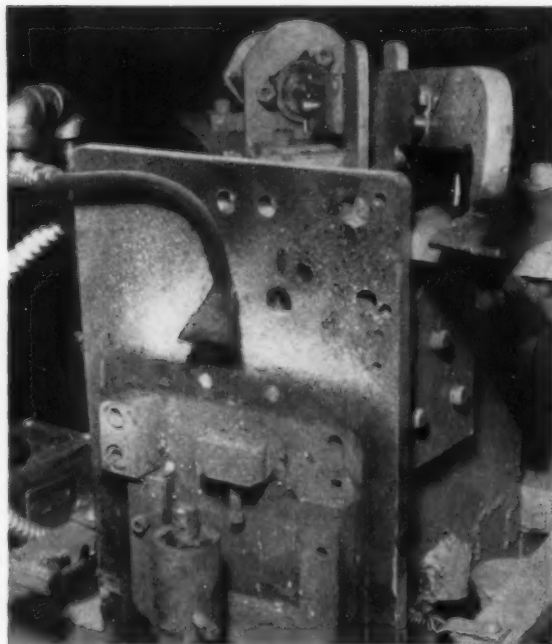
Gas heating is used because it puts the heat where needed, and is faster. Only a single ring of solder is required. Electronic controls are used because timing is precise and desired results are readily secured.

To load the fixture, two tank flange holes are fitted over pins. The outer end of the pipe fits under a latch to insure correct pipe height and angle. A ring of silver solder is already at the joint and the adjacent steel surfaces are already fluxed.

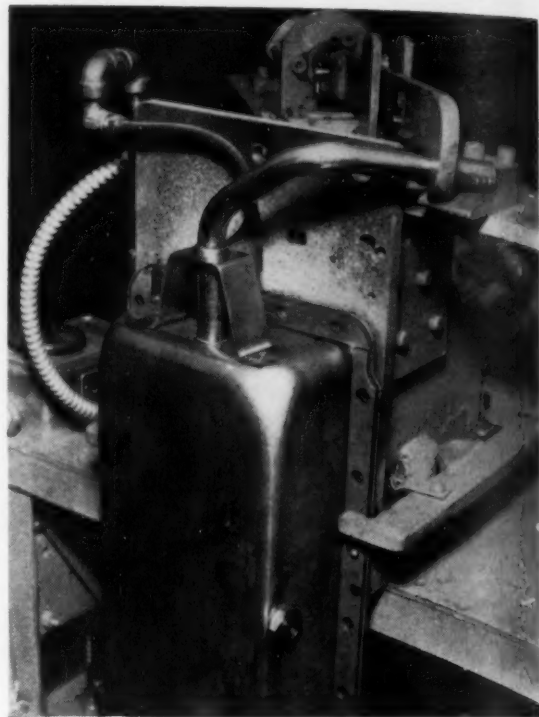
The automatic soldering cycle is as follows:

(1) Air cylinder plungers lock two side levers to hold tank to fixture and the top lever clamps outer end of pipe.

(2) Gas mixed with air and ignited by pilot



SOLDERING FIXTURE ready for loading. Gas jet, seen in lower center, applies heat rapidly where wanted.



TANK WITH TUBE in the assembly fixture has ring of silver solder next to the fluxed steel surfaces. Clamps for holding tube and tank are air-operated.

flame is fed from eight holes in the burner which fits inside the tank end of the pipe. The pipe heats first but enough heat is conducted to the flat face around the pipe to raise the temperature of a restricted circle on which the solder ring rests. This heat, plus some heat direct from pipe, melts the solder. As the pipe is hotter, the solder tends to hug it rather than spread over the flat face (as in the prior setup). All this occurs in the few-seconds interval to which the timer for gas supply is set.

(3) At end of interval, the gas is shut off and a compressed air jet from a flattened nozzle back of the joint is directed at the joint to expedite cooling and solidification of solder. Time for cooling is also controlled.

(4) When cooling is complete, plungers unlock and assembly is removed.

Soldered assemblies are dunked in water for cooling and to remove flux from around the joint.

One attendant operates two fixtures. Previously, two fixtures were used but required one operator each. With the new setup, the total rate per operator has more than doubled. Direct labor per piece, because the cycle is shorter, has been cut in half. An additional economy has been the saving of silver solder.

FREE publications

These publications describe money-saving equipment and services... they are free with no obligation... just fill in the number and mail the postcard.

Cupola charging

The second of a series of booklets on better foundry operation has been released. *Tips on Improving Cupola Charging* tells how to get a smoother flow of materials from freight cars to cupolas. It shows how mechanical charging can improve and conserve manpower—how to get better unloading and makeup—how improved charging benefits melting. *Whiting Corp.*

For free copy insert No. 1 on postcard.

Induction motors

Data on ratings, construction and types of large vertical induction motors are contained in a new bulletin released recently. Widely used for pumps and other vertical drives, vertical solid shaft induction motors described are available in ratings from 60 hp up. Illustrations show motor construction and typical installations. *Allis-Chalmers Mfg. Co.*

For free copy insert No. 4 on postcard.

Gas vapor

A new 4-p. booklet describes how to make your own gas with the Vaporifier. It is a dependable oil-gas generator for industrial heat applications. Combustion is improved, and greater safety and economy are possible. Engineering data, drawings, and photographs of typical installations are included. *Vaporifier Corp.*

For free copy insert No. 5 on postcard.

Turn Page

Extruded aluminum

An effective presentation of the advantages of designing products around extruded aluminum parts is presented in a new industrial movie *The Shape Of Things To Come*. The film shows extrusion methods and many possible applications which can effect long range savings when incorporated in new designs. Bookings may be arranged. *Reynolds Metals Co.*

For free copy insert No. 2 on postcard.

Quality castings

An outstanding, 48-p. book on quality castings has been produced to mark the 60th anniversary of Hamilton Foundry & Machine Co. Even if you had no immediate need for castings, the book in itself is worth reading. It is a superb example of the printer's art, tells clearly and simply the "how" of iron castings, and opens wide the possibilities of this type of metal forming. *The Hamilton Foundry & Machine Co.*

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other parts of the 150 hp OILGEAR Fluid Power Variable Delivery Pump (above) for machinery with operating pressures up to 3000 pounds per square inch... with smooth, quiet, startlingly new fluid power performance characteristics. KAYDON Bearings are used also on 60 hp and 100 hp OILGEAR Fluid Power pumps.

KAYDON Types of Standard and Special Bearings:
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• Roller Radial • Roller Thrust • Bi-Angular Bearings

ON

ENGINEERING CORP.

CHICAGO

ALL AND ROLLER BEARINGS

Automatic gas soldering gives better, cheaper joints

To improve the quality of pipe to tank joints in oil reservoir tanks of Dynaflo transmissions a new soldering setup has been installed at Buick's transmission plant. Output per operator has more than doubled and silver solder use cut in half.

Until recently, this job was done by induction heating but the inductor coil had to be outside the pipe and close to the end wall of the tank. This caused the tank wall to heat more rapidly than the tube. Silver solder flowed away from the joint and two rings of solder were required where one would suffice if more uniform heating were attained.

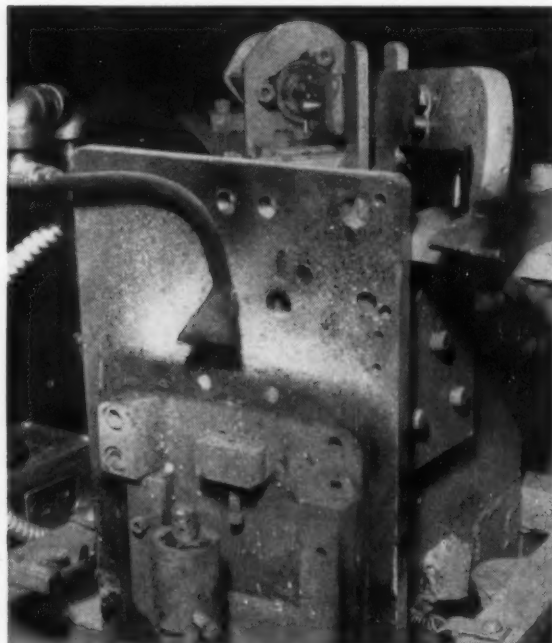
Gas heating is used because it puts the heat where needed, and is faster. Only a single ring of solder is required. Electronic controls are used because timing is precise and desired results are readily secured.

To load the fixture, two tank flange holes are fitted over pins. The outer end of the pipe fits under a latch to insure correct pipe height and angle. A ring of silver solder is already at the joint and the adjacent steel surfaces are already fluxed.

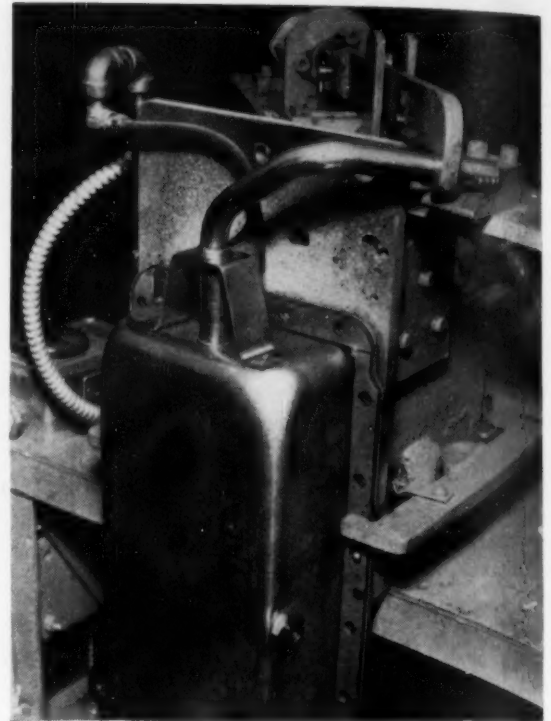
The automatic soldering cycle is as follows:

(1) Air cylinder plungers lock two side levers to hold tank to fixture and the top lever clamps outer end of pipe.

(2) Gas mixed with air and ignited by pilot



SOLDERING FIXTURE ready for loading. Gas jet, seen in lower center, applies heat rapidly where wanted.



TANK WITH TUBE in the assembly fixture has ring of silver solder next to the fluxed steel surfaces. Clamps for holding tube and tank are air-operated.

flame is fed from eight holes in the burner which fits inside the tank end of the pipe. The pipe heats first but enough heat is conducted to the flat face around the pipe to raise the temperature of a restricted circle on which the solder ring rests. This heat, plus some heat direct from pipe, melts the solder. As the pipe is hotter, the solder tends to hug it rather than spread over the flat face (as in the prior setup). All this occurs in the few-seconds interval to which the timer for gas supply is set.

(3) At end of interval, the gas is shut off and a compressed air jet from a flattened nozzle back of the joint is directed at the joint to expedite cooling and solidification of solder. Time for cooling is also controlled.

(4) When cooling is complete, plungers unlock and assembly is removed.

Soldered assemblies are dunked in water for cooling and to remove flux from around the joint.

One attendant operates two fixtures. Previously, two fixtures were used but required one operator each. With the new setup, the total rate per operator has more than doubled. Direct labor per piece, because the cycle is shorter, has been cut in half. An additional economy has been the saving of silver solder.

FREE publications

These publications describe money-saving equipment and services... they are free with no obligation... just fill in the number and mail the postcard.

Cupola charging

The second of a series of booklets on a better foundry operation has been released. *Tips on Improving Cupola Charging* tells how to get a smoother flow of materials from freight cars to cupolas. It shows how mechanical charging can improve and conserve manpower—how to get better unloading and makeup—how improved charging benefits melting. *Whiting Corp.*

For free copy insert No. 1 on postcard.

Induction motors

Data on ratings, construction and types of large vertical induction motors are contained in a new bulletin released recently. Widely used for pumps and other vertical drives, vertical solid shaft induction motors described are available in ratings from 60 hp up. Illustrations show motor construction and typical installations. *Allis-Chalmers Mfg. Co.*

For free copy insert No. 4 on postcard.

Gas vapor

A new 4-p. booklet describes how to make your own gas with the Vaporifier. It is a dependable oil-gas generator for industrial heat applications. Combustion is improved, and greater safety and economy are possible. Engineering data, drawings, and photographs of typical installations are included. *Vaporifier Corp.*

For free copy insert No. 5 on postcard.

Turn Page

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Postcard valid for 8 weeks only. Information may be secured subsequently by separate letters fully describing each item wanted, including company name.

Extruded aluminum

An effective presentation of the advantages of designing products around extruded aluminum parts is presented in a new industrial movie *The Shape Of Things To Come*. The film shows extrusion methods and many possible applications which can effect long range savings when incorporated in new designs. Bookings may be arranged. *Reynolds Metals Co.*

For free copy insert No. 2 on postcard.

Quality castings

An outstanding, 48-p. book on quality castings has been produced to mark the 60th anniversary of Hamilton Foundry & Machine Co. Even if you had no immediate need for castings, the book in itself is worth reading. It is a superb example of the printer's art, tells clearly and simply the "how" of iron castings, and opens wide the possibilities of this type of metal forming. *The Hamilton Foundry & Machine Co.*

For free copy insert No. 3 on postcard.

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Free Publications

Continued

Marking made easy

A new leaflet describing Markal Paintstik is available. The sticks have been designed for specific marking jobs at all temperatures. They can be used on rough and smooth surfaces and on almost all materials. A handy chart describes the best marking stick for each material. *Markal Co.*

For free copy insert No. 6 on postcard.

Metal cleaners

Specialized materials, procedures and equipment used in cleaning and preparing metal for finishing are described in a new 48-p. booklet. Based on experience in the aircraft industry, a wide range of production cleaning and related operations are explained. Prominent among

these are methods of preparing aluminum and magnesium for various manufacturing processes. Also presented are recommendations on equipment designed to simplify cleaning and rinsing operations, and save labor and material costs. *Oakite Products, Inc.*

For free copy insert No. 7 on postcard.

Electronic tubes

A 28-p. booklet on industrial electronic and special purpose tubes has been published. Designed for industrial use, the booklet furnishes complete technical specifications and information on hundreds of special purpose tubes widely used in industry. *Milo Radio & Electronics Corp.*

For free copy insert No. 8 on postcard.

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Title

Company

Co. Address

THE IRON AGE, New York 17

Fill in above the number of the item on which you need further data.

Automatic lubrication

The Oil-Mist automatic lubrication system is described in a new 12-p. booklet. The system applies a uniform oil film to groups of bearings designed for either oil or grease lubrication. There are no moving parts. The system operates on compressed air. Microscopic particles are carried in the air stream through tubing to the bearings. Moving surfaces within the bearings knock the oil out of the stream causing a buildup of oil film on the bearings. *Alemite Div. of Stewart-Warner Corp.*

For free copy insert No. 9 on postcard.

Gasholders

Design of the Wiggins tank-type gasholder is described in a new 8-p. booklet. Engineering principles of the gasholder are described, and typical tanks are illustrated with photos and drawings. *Ashmore Benson, Pease & Co.*

For free copy insert No. 10 on postcard.

Versatile blast cleaner

A new 22-p. catalog describes the VacuBlaster, a combination blast cleaner and vacuum. This portable unit uses a steel abrasive and permits blast cleaning operations over small or large areas. It is invaluable for maintenance work and permits use of this cleaning method in many places heretofore inaccessible. *Vacu-Blast Co., Inc.*

For free copy insert No. 11 on postcard.

Air, hydraulic devices

The 1951 issue of the pocket manual "The Facts of Life on Air and Hydraulic Devices" is now available. Compiled specifically as a service to tool engineers, designers and maintenance men, the manual contains much information of value in setting up and servicing this type of equipment. *Logansport Machine Co.*

For free copy insert No. 12 on postcard.

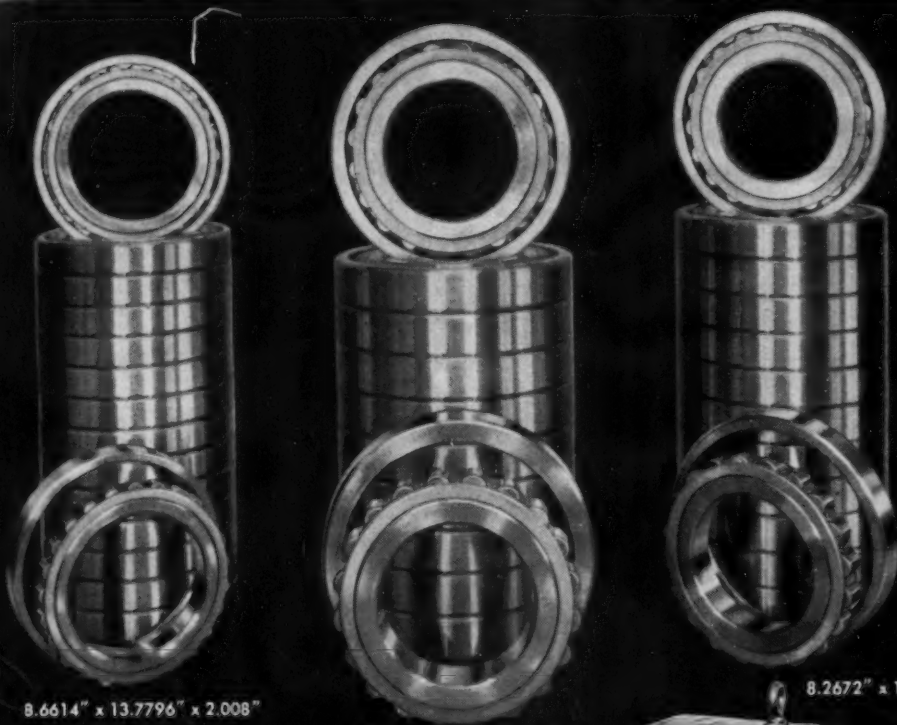
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Contact **KAYDON** Muskegon

FOR ALL TYPES OF BALL AND ROLLER BEARINGS: 4" BORE TO 120" OUTSIDE DIAMETER



KAYDON
Roller
Radial
Bearings



8.6614" x 13.7796" x 2.008"

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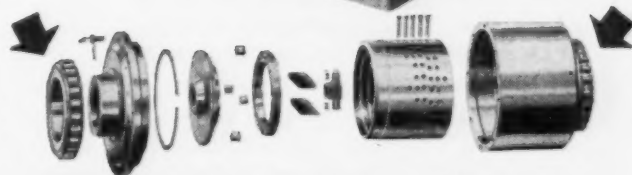
8.2672" x 14.9606" x 2.402"



KAYDON and OILGEAR cooperate for compact design

OILGEAR engineers, pioneering Fluid Power Pumps and Motors, achieved greater compactness and efficiency than ever before considered possible. KAYDON Engineers, pioneers in Thin-Section Precision Bearings, created bearings that were "right at home" at the high level of OILGEAR advanced design.

KAYDON Precision Bearings and Needle Rollers have helped many machinery builders achieve modern design with fewer parts, greater compactness, reduced weight, precision smoothness in operation . . . advantages that improve production, cut costs, and carry impressive sales appeal.



This exploded view shows KAYDON Front and Rear Roller Rotor Bearings with relation to other parts of the 150 hp OILGEAR Fluid Power Variable Delivery Pump (above) for machinery with operating pressures up to 3000 pounds per square inch . . . with smooth, quiet, startlingly new fluid power performance characteristics. KAYDON Bearings are used also on 60 hp and 100 hp OILGEAR Fluid Power pumps.

KAYDON

THE

ENGINEERING CORP.

MUSKEGON • MICHIGAN

PRECISION BALL AND ROLLER BEARINGS

September 20, 1951

137

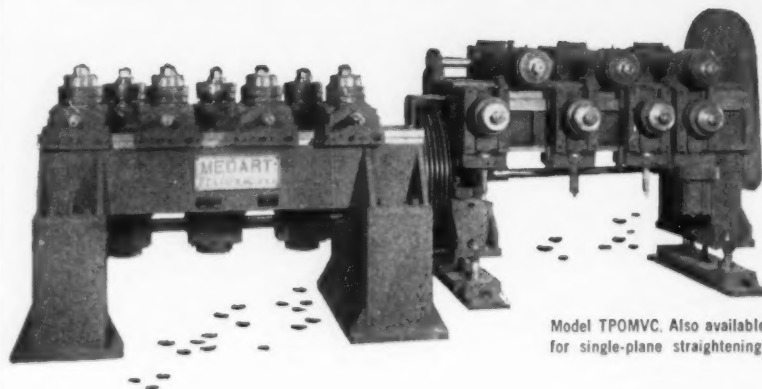
Versatile! Variable Centers!

Faster Straightening Of An Extreme Range
Of Shapes On This **New** Machine



Two-Plane-Overhung Roll-Variable Center

SHAPE STRAIGHTENER



Model TPOMVC. Also available
for single-plane straightening.

- Combines the fast, simple setup advantage of an overhung roll straightener, with exceptionally versatile control of bending stresses possible only in a movable-roll center type of machine.
- Variable center roll housings permit adjustment of bending spans for handling an extreme variety of shapes and sizes. This feature prevents overloading of bearings and assures uncommon accuracy.
- Bottom rolls can be moved directly under top rolls for cross-rolling or reforming cross sections of distorted extruded or other shapes simultaneous with straightening action.
- Top and bottom rolls, when set in opposing pairs, act as additional pinch-feed rolls for extra traction required for difficult-to-straighten shapes.
- Rolls are quickly and easily changed by removing locknut on end of each shaft.
- Rolls are of Medart Smavroc alloy steel hardened and ground to shape ... All gears operate in oil within enclosed housings ... Pinch-feed rolls at end are air-operated. Timken bearings throughout.

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Free Publications

Continued

Submerged combustion

Evaporation by submerged combustion is the subject of a new 12-p. booklet. For the first time complete utilization of heat may be made, enabling shorter heating times to raise liquids to required temperatures. High efficiency is claimed, and evaporation is possible at lower temperatures due to physical laws which are not operative with other methods. Submerged Combustion Co. of America.

For free copy insert No. 13 on postcard p. 138

Employee retirement

A 17-p. booklet designed to assist employers in establishment of employee retirement plans based on deferred profit-sharing has been published. The booklet gives the advantages of such plans for employers and employees as well as essential requirements and procedure for qualifying them with the Internal Revenue Department. Wellington Fund.

For free copy insert No. 14 on postcard p. 138

Heavy duty grinder

A new 20-p. booklet describes the Mattison line of heavy duty grinders. These have been designed to meet the continued trend to heavier, larger and sturdier machines incorporating greater speed and accuracy. Surface, face and disc grinders are engineered to meet all grinding problems. Mattison Machine Works.

For free copy insert No. 15 on postcard p. 138

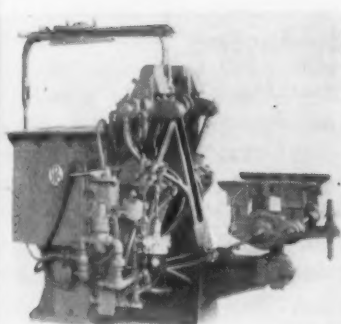
Air compressors

A new 12-p. catalog features the Quincy line of industrial air compressors. Illustrated with photos and drawings, and including pertinent engineering data, the booklet describes 35 compressors suitable for a variety of manufacturing installations. Compressors ranging from 1 to 90 cpm are available. Copper finned intercooling and loadless starting are featured. Quincy Compressor Co.

For free copy insert No. 16 on postcard p. 138

NEW EQUIPMENT

New and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on page 135 or 136.

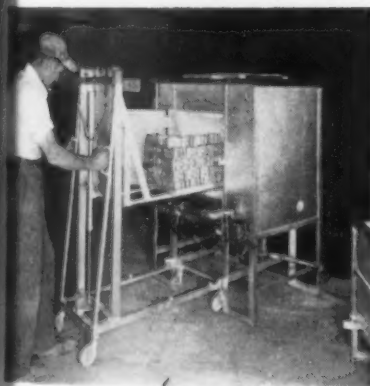


Use two cylinders for jolt, draw operations

Outstanding feature of a new jolt rock-over pattern-draw machine is use of twin 5-in. jolt cylinders for both jolting and drawing operations. The two pistons operate in tandem and guide each other. The machine has a 600-lb capacity on standard 80 psi line pressure and a 10-in. pattern draw stroke. It can handle flasks of any length and up

to 27 in. wide. The rock-over table is automatically locked in both jolt and pattern-draw positions by means of the rock-over air cylinders. One piece construction of the rock-over table eliminates the need for mechanical devices to prevent pattern from shaking loose during the jolt operation. *SPO, Inc.*

For more data insert No. 17 on postcard p. 135

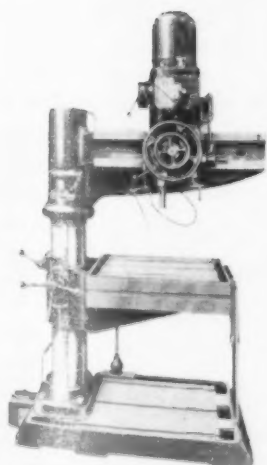


Mechanical loader simplifies furnace charging

A new mechanical furnace loader has been designed to speed up heat treating operations. Loading and unloadings are speeded by eliminating single piece handling. Work to be treated is placed on the frame of the loader, which will handle several layers of work at one time, and the entire load is inserted into the furnace by the fork bars of the loader. Unloading is accomplished

by inserting fork bars and withdrawing the load from the furnace. The load is then wheeled to the quench tank or the next operation and, by the hydraulic release, quenched or placed at any desired level. During the operation the operator is protected from heat by a built-in metal shield. *A. D. Alpine, Inc.*

For more data insert No. 18 on postcard p. 135



Radial drill has 4 ft x 1 1/4 in. capacity in mild steel

Accuracy and economy are claimed for this Richmond SR2 radial drill manufactured by Midgley & Sutcliffe of Leeds, England. An extremely rigid column is comprised of a single unit of 9 in. diam, accurately machined and ground to receive the arm and roller bearings for the rotating motion. The saddle is mounted on needle roller bearings, moves freely along the arm by finger pressure, and can be securely clamped in any position. Drive is from a 2 hp constant speed

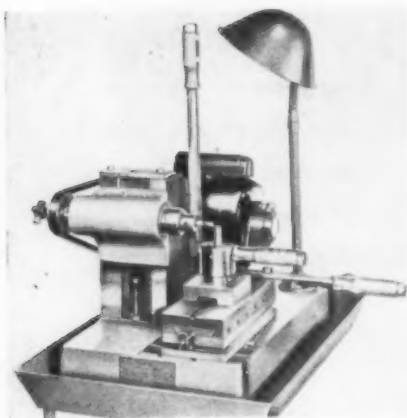
reversing motor, flange mounted directly on top of saddle, through nickel chrome heat treated gearing. All speed changes are obtained by ground gears of nickel chrome steel. Nine spindle speeds are controlled by two levers. Quick hand traverse, fine hand feed, and automatic feed to the spindle are provided. An automatic depth trip knocks off at predetermined depth of hole. *British Industries Corp.*

For more data insert No. 19 on postcard p. 135

Turn Page

New Equipment

Continued



Bench machine mills, turns, grinds

The Viking LMG-3 combination bench-type production machine can be set up for turning, milling or grinding through simple changes in tooling. The machine has a common base, power unit, spindle and vertical and horizontal slides. Spindle speeds with standard pulleys are 825 to 3450 rpm. The 1 in. spindle with No. 7 B & S taper hole is ball bearing mounted. Spindle is adjusted vertically with maximum

7 in. distance from centerline to work table surface. A complete line of tooling is available for conversion, or the machines may be furnished as single-purpose units where battery production line operation is required. Overall base size is 11 x 18 in. Spindle speeds range from 100 to 7000 rpm. Viking Industries.

For more data insert No. 20 on postcard p. 14

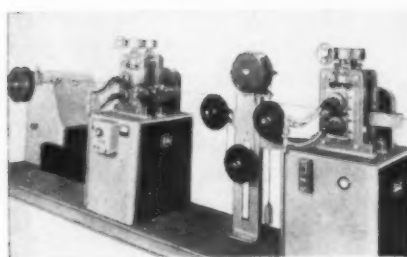


Torque tools can be quickly tested

A new torque testing device accurately determines torque settings of hand torque tools from 1 in. lb to 75,000 ft lb. With the 15 in. dial which allows direct, easy reading, it is possible to set hand torque tools in one-fourth the time previously required on other testers. The mechanism is encased in a rigidly constructed housing. The entire operation is manual. The

machine is built to withstand the knocks of daily shop use. Four stations are provided to test various wrenches, tools and cable. Adapters are available to fit each station and all recognized torque wrenches. With proper fittings the machine may also be used to test tension exerted against cables, rope or wire. Richmond, Inc.

For more data insert No. 21 on postcard p. 14

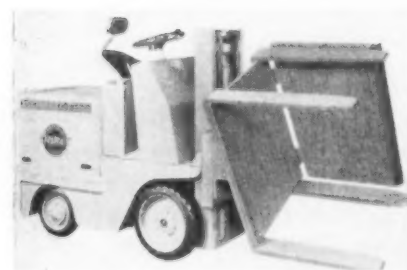


Low-cost wire mill has simple design

A high-speed, low-cost, two-stand wire rolling mill has been designed for flattening round and other types of wire. The mill's simple design makes it easy to set up for short production runs. Drive motors receive power from a single gener-

ator. The generator, with all controls, is housed in a single compact unit. Synchronization of the two drive motors is accomplished by a dancer roll rheostat. Rolls are water cooled. Stanat Mfg. Co.

For more data insert No. 22 on postcard p. 14

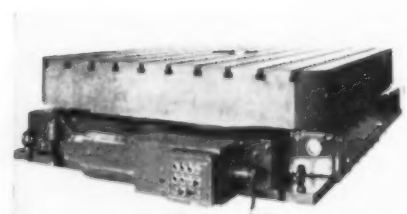


Revolving head inverts unit loads

Unit loads may be quickly inverted without taking them from their pallets with the use of a revolving head attachment for fork trucks. Attachment consists of a revolving head and set of top-and-bottom forks, with a plywood backstop and a side retaining board. To invert

the load, the operator moves his truck in with the plywood retainers in a vertical position. An empty pallet is carried on the top fork of the attachment. After lifting the load out of its storage spot, it is turned 180°. Baker-Raulang Co.

For more data insert No. 23 on postcard p. 14



Rotary table, 84 x 96 in., carries heavy loads

Featured in the new rotary table is hydraulic clamping and raising device built in, self-contained and controlled by pushbutton panel at the operators position. A precision

indexing unit consists of dial indicator and adjustable stops. The table is said to revolve easily even with its capacity load of 150,000 lb. Ohio Machine Tool Co.

For more data insert No. 24 on postcard p. 14

Towmotor revamps line

Five new models have been added to the Towmotor line of industrial trucks. Three of the new models replace models formerly produced. They are available with solid or cushion tires and a shorter wheelbase for greater maneuverability. The other models are equipped with pneumatic tires for rapid movement of loads over rough surfaces. *Towmotor Corp.*
For more data insert No. 25 on postcard p. 135

Carbide masonry drill

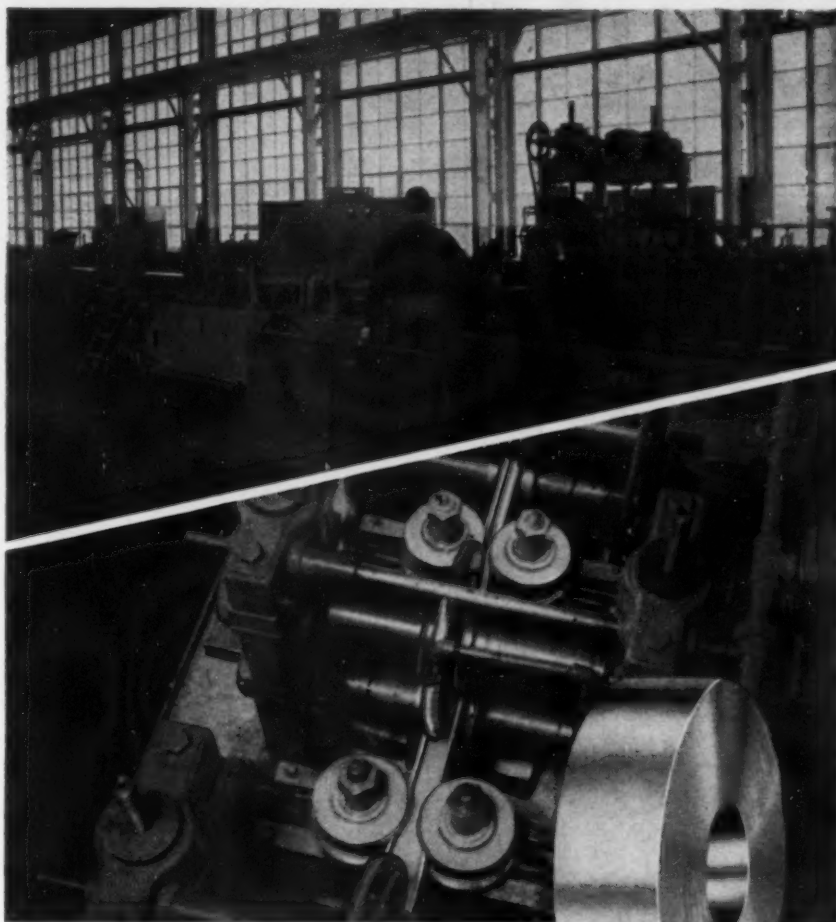
A new carbide tipped masonry drill is being offered. The drill is machined from solid stock, with a round nose supporting the carbide tip. Ample dust clearance and double lead fast spiral dust grooves are provided. It is claimed holes up to 12 in. deep can be drilled without stopping or removing the tool from the hole. The drill body is the same as the nominal size of the drill and the wide lands serve to guide it in producing a clean and perfect hole. *Super Tool Co.*
For more data insert No. 26 on postcard p. 135

Pallet stacker unit

The Multi-Stak pallet stacker unit provides an all-steel pallet with self-contained collapsible stacking attachment for safe tiering of crushable, irregular, odd-shaped or mixed merchandise. A safety pin-in-slot arrangement permits standards to be set up quickly by one person. Ends of the standards nest over raised locating stops on the stringers, to assure positive locking in the upright position. Another innovation in the deck pallet surface are the nonslip, checkered steel plate leading edges. *Elizabeth Iron Works, Inc.*
For more data insert No. 27 on postcard p. 135

Hydraulic pullers

Popular sizes of the OTC Grip-O-Matic pullers can now be used with the Power-Twin hydraulic puller. Only slight changes are necessary. The versatile hydraulic puller speeds work, eliminates torque, and takes the hard labor out of pulling jobs. *Owatonna Tool Co.*
For more data insert No. 28 on postcard p. 135
Turn Page



U N I F O R M



Newly built and newly equipped, Wallingford's tubing mill is as modern as today. This equipment, operated by men of experience, using Wallingford strip steel of consistently high quality, produces tubing that in analysis, tolerance and finish can be counted on to be uniform at all times. This complete dependability provides savings in fabrication. Less down time, fewer rejects, and a finished product of constant quality is assured with Wallingford uniform tubing.

THE WALLINGFORD STEEL CO.



WALLINGFORD, CONNECTICUT, U.S.A.
LOW CARBON • HIGH CARBON
ALLOY • STAINLESS • STRIP and TUBING



No special tools needed. Nothing to finish off, no bucking, trimming or grinding. Just drive the pin and the job is done. Fast, tight, strong.

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OFFICES IN PRINCIPAL CITIES

New Equipment Continued

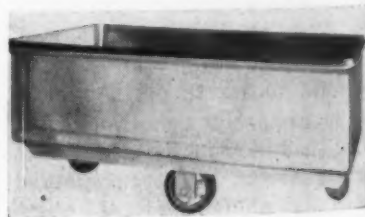


Vertical milling head

Angle boring and milling on horizontal milling machines can be done with a new precision vertical milling head. The unit has a micrometer vertical quill spindle feed. Travel of the spindle is $1\frac{3}{4}$ to 3 in. The micrometer lead screw has a navy bronze stud for spindle and thrust support with set-screw take-up adjustment. Spiral and helical gears and spindles are hardened and ground. Gear rating is $1\frac{1}{2}$ to 15 hp, running in oil. Twenty-five models are available for every make and size horizontal milling machine. Heads can be supplied with or without micrometer settings.

Brown Mill Tool Co.

For more data insert No. 29 on postcard p. 133



Stainless tub truck

A sanitary, stainless-steel tub-type truck originally designed for food handling is finding new industrial applications. The truck is caster mounted and has a capacity of 1000 lb. Inside corners are rounded for easy cleaning. Top edges are reinforced to stiffen sides and resist damage. Market Forge Co.

For more data insert No. 30 on postcard p. 133

lead

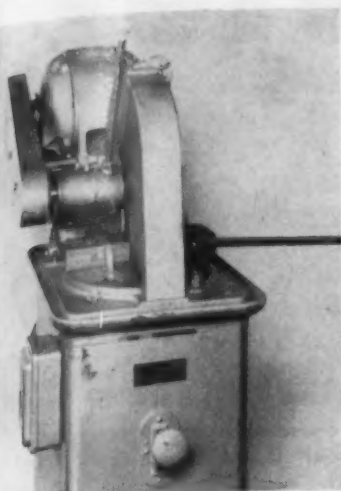
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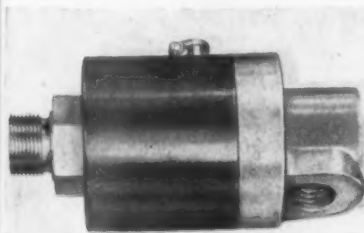


Speedy cut-off jobs

A new, low-cost wet and dry cut-off machine can be used for fast cutting of hard steels, and is readily adjusted to cutting of all nonferrous metals and plastics. The wet cutting attachment is fully enclosed. The saw is powered by a 3 hp motor and the 10 in. wheel is mounted on a swinging arbor. The saw rotates 45° in either direction. The arbor is 1 in. alloy steel, mounted on preloaded bearings, and sealed on the outside. Bearings are provided with an adjustable takeup. Capacity of the new model is 1½ in. for rounds and 2 in. for shapes.

Joseph E. Murphy Co.

For more data insert No. 31 on postcard p. 135



Rotating air union

Balanced sealing and easy maintenance are features of a new rotating air union. The balanced sealing feature prevents line pressures from increasing the load on the sealing faces, minimizes wear and permits a predetermined low torque. Use of aluminum housing and end bell gives light, rigid construction. Sealed-for-life ball bearings gives efficient performance at high speeds.

Deublin Co.

For more data insert No. 32 on postcard p. 135

Turn Page

SHENANGO Centrifugal
CASTINGS

... KEY TO SAVINGS

These ram pistons, centrifugally cast of Meehanite Metal for 300-ton hydraulic press, must withstand 4,000 p.s.i. Completely machined and assembled by Shenango.



Teamed up for longer life under pressure

SHENANGO CENTRIFUGAL CASTINGS OF MEEHANITE METAL

FOR pressure service . . . for almost any severe service . . . it's hard to match Shenango centrifugally cast Meehanite Metal.

First, Shenango's centrifugal process means a uniform, high-strength, pressure-dense casting, free from sand inclusions, blow holes and other defects. Next, in Meehanite Metal you have finer graphite flakes, always more evenly dispersed, thus avoiding stress concentrations and permitting a finer finish.

So here's a combination you just can't beat for wear-life . . . for resistance to abrasion, pressure or shock . . . for long-range economy!

If your plans call for essentially symmetrical parts, large or small, rough, semi- or finish-machined, check with Shenango. Get all the facts! Informative bulletins are yours for the asking.

SHENANGO-PENN MOLD COMPANY

Dover, Ohio

Executive Offices: Pittsburgh, Pa.

SHENANGO

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LOW COST High Frequency HEATING UNIT

AT A PRICE SO LOW THAT NO MACHINE
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Unit illustrated brazing
carbide tips to cutting
tools. Shanks up to 1 1/2"
square can be satisfac-
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• SMALL and COMPACT

Conveniently operated
on bench or table—
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No special power installa-
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110 volts, 60 or 50 cycle
line at unity power factor.

• FULLY GUARANTEED

Guaranteed for continuous duty
cycle and stated performance.

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*Faster, Better
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**BRAZING, SOLDERING
HARDENING, ANNEALING
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MELTING**

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WILL HEAT TO 1500° F.

| | |
|-------------------------------------|------------|
| 1/8" steel rod 1" length in approx. | 1 second |
| 1/4" " " " " " " " " | 3 seconds |
| 1/2" " " " " " " " " | 15 seconds |
| 1" " " " " " " " " | 60 seconds |

Will melt 4 ounces of brass or steel in 4 minutes.
Equally well suited for heating of non-ferrous metals.



HARDEN



SOLDER

Lepel

HIGH FREQUENCY HEATING UNITS



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Best for general applications.

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Cannot become accidentally disen-
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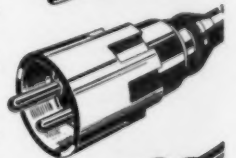
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trated.



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Usually used with heavier currents.

No. D2D625M portable male illus-
trated.



(4) OVAL PUSH-PULL STYLES —

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No. 330F portable female illustrated.



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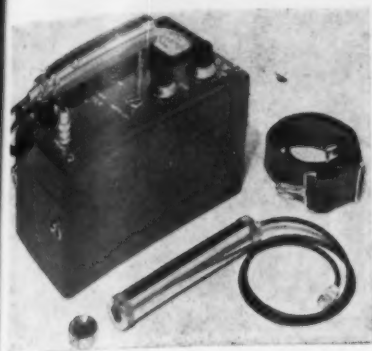
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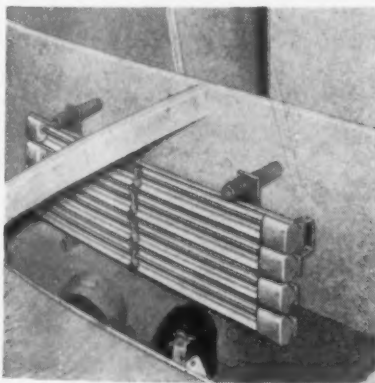
Continued



Radiation survey meter

Location of relatively small amounts of spilled radiochemicals is simple with a new alpha, beta, gamma survey meter. Designed originally as a radiation dosage rate meter and for use as a low-level contamination monitor, the instrument has also proved helpful in locating radium, and in checking shielding of stored isotopes. The instrument is waterproof and lightweight, and is battery operated. *Tracerlab, Inc.*

For more data insert No. 33 on postcard p. 135



Flood plants dry out

Four Chromalox radiant heaters normally used for drying ink on cardboard recently helped a Midwest flood plant get going again. The heaters were rewired in series and installed in a temporary insulated plywood oven. An electric fan was used to circulate air in the oven, making it possible to hold the temperature constant at 200°F. Operating 24 hr a day, the oven dried out 300 of the plant's motors. *Edwin L. Wiegand Co.*

For more data insert No. 34 on postcard p. 135

Turn to Page 149



FIFTY YEARS OF PROGRESS IN SLEEVE BEARINGS

By sharing in the fifty-year development of automotive and industrial America, Johnson Bronze has become a leading manufacturer of Sleeve Type Bearings. Great changes have been made in Johnson Bearings in that time. New types and designs have been developed. New conceptions of bearing materials and refinement of alloys were important steps of progress. Metals have been combined for greater serviceability, lighter weight and lower cost to the user. Many of the Johnson Sleeve Bearings of today show only superficial resemblance to the types of fifty years ago.

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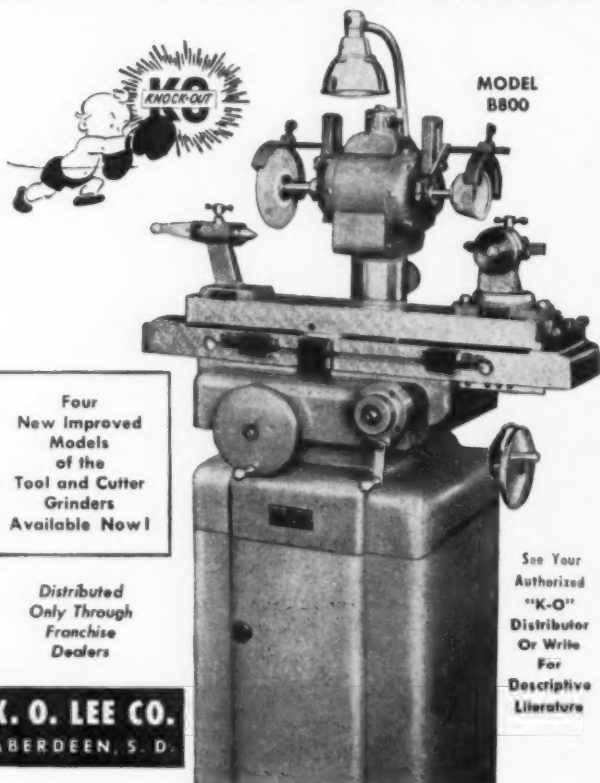
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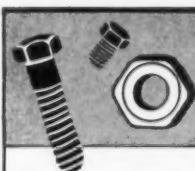
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New Improved
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Tool and Cutter
Grinders
Available Now!

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THAT **MUST** BE RIGHT...

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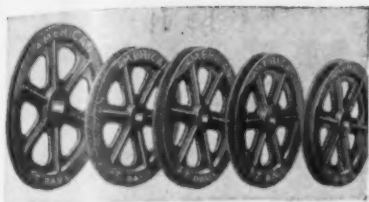
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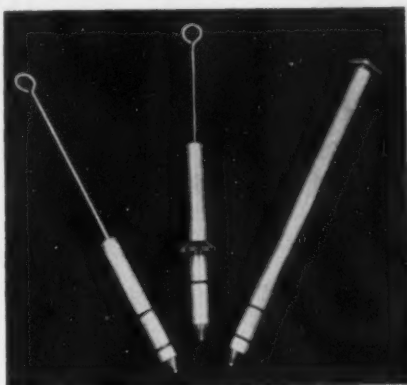
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Find the plant which
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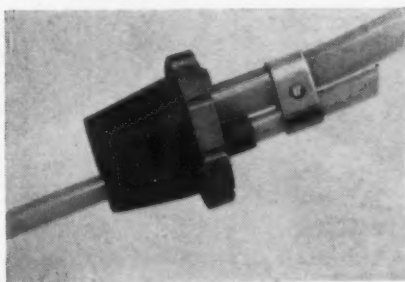
Continued



Removing boring chips

Hand-operated, load-releasing tubular Magnetools are being used for removing boring chips from castings and for entering small blind holes. They are especially designed for removing steel chips or parts from other steel surfaces. A brass pickup tip prevents sticking. Models are designed for either hand or mechanical wipe-off. A neoprene bumper ring prevents the magnet from grabbing sides. *Multifinish Mfg. Co.*

For more data insert No. 35 on postcard p. 135



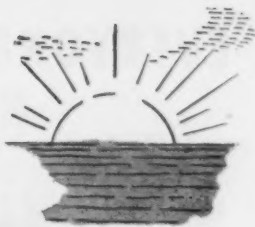
No-drip carboy spout

The GS safety air vent pouring spout fits any size carboy and assures a smooth even flow of acid without spurts or splashes. The unit is made of acid-resistant rubber and plastic tubing. The spout has a capacity of 5 gal per min. Acid will not spill or splash and a steady flow is assured. Pumping or siphoning are eliminated. *General Scientific Equipment Co.*

For more data insert No. 36 on postcard p. 135

Resume Your Reading on Page 146

The
sun
comes
up ...

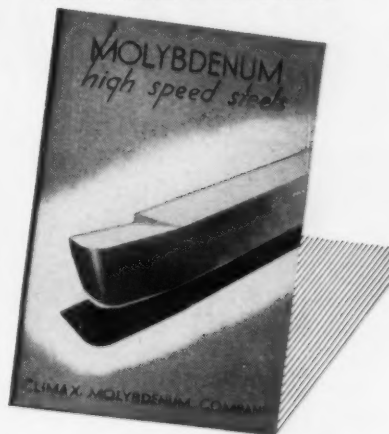


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For limited production . . . A range of marking equipment from steel hand stamps and type holders to hand-operated devices.

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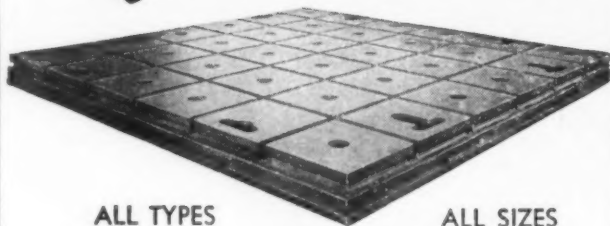


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ROLLING MILL MACHINERY
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(Up to 80,000 pounds)

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for **GOLD** and **SILVER**



Are used in laboratories, mints, experimental shops, and jewelry manufacturing plants.

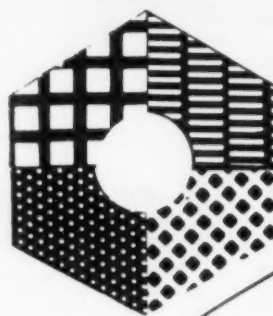
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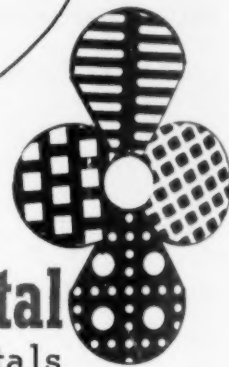
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Steel Will Meet Wilson's Demand for Production

Will boost output million tons in first quarter . . . No undue maintenance trouble seen . . . Conversion to continue stellar role . . . Bars causing grief in Detroit . . . Ingot rate up.

The steel industry will produce the extra million tons requested by Defense Mobilizer Wilson for the first quarter of 1952. This prediction is based on three assumptions: (1) That strikes will not cause large production losses, (2) that the industry will be permitted to expand at its projected rate, and (3) that shortages of raw materials, such as scrap, do not force production curtailment.

A careful check of mill superintendents by IRON AGE editors shows that steelmaking is not suffering unduly from breakdowns or lack of material for repairs. It is true that some maintenance—such as furnace relining—is being put off as long as possible to keep steel pouring out at a high rate. But maintenance schedules are being met.

No Maintenance Trouble—Nor is there any likelihood that maintenance trouble will stymie production in the near future. Rated capacity of steelmaking facilities is calculated to permit about one-eighth of furnaces to be down for relining at any given time. This permits orderly scheduling of production and rotating of maintenance—without drastic disruption of output.

Conversion arrangements will continue to play a stellar role in the steel market. Though the government is directing some of this tonnage, it shows every indication of permitting this last frontier of the free steel market to continue—despite total CMP.

Conversion Makes More—The reason is clear: Conversion,

though costly to the consumer, makes it possible to produce more finished steel than would otherwise be turned out.

Although conversion arrangements may become infinitely devious and complicated, a typical one works something like this: A steel user buys ingots or some other semifinished form of steel from a producer who lacks finishing capacity to process them. He then ships them to another mill with excess finishing capacity to have them converted to the form of finished steel he needs.

Hanging On—Conversion is expensive because, in addition to rolling fees, it involves extra freight charges from ingot source to rolling mill. If long or complicated transshipment is involved, the freight charges become terrific.

Some steel users had been hoping to scuttle these expensive conversion arrangements. They had planned to cut costs by getting their steel at regular mill price through the Controlled Materials Plan. But, now, they are holding on to conversion for dear life. Others who had already cancelled conversion are jumping back into line.

Other Troubles—They are finding CMP is no panacea for steel procurement. For one thing, some requests for steel have been scaled down rather drastically. Other users who have gotten satisfactory or liberal allotments find they can't get their CMP tickets honored because mills are booked solid. Even if they are able to get

their orders on the books there is always the chance they will be bumped by military priority.

Conversion may be expensive and not altogether dependable. But many consumers will still use it as a hedge against CMP as long as they are permitted to do so. Questionable as it may be, it's about the only insurance they can buy on steel delivery.

Detroit Bars—A check among Detroit steel buyers indicates the percentage of conversion today is greater than it was a year ago. This is partly due to growing tightness of all types of bar steel. CMP tickets for vital crankshaft steel provide about 30 pct of the total allotment—so car makers have to go elsewhere (conversion) to make up the deficit.

In addition to crankshafts, the bar steel shortage is catching automakers on axles, gears, steering knuckles and steering arms. Cold-drawn bars are even worse than hot-rolled.

"Me, Too" Rush—Despite Washington assurance that the new super priority (DX) will be used very sparingly, industry is skeptical. Still remembered is the multiple-band priority system of World War II which bogged down miserably. It is still not clear how this super priority can be applied to parts and materials without affecting distribution of steel, copper and aluminum under CMP.

In the past Washington has found it very difficult, if not impossible, to keep using special priority sparingly. Will pressure of "me, too" become too great.

Ingot Rate Up—Steelmaking operations this week are scheduled at 101 pct of rated capacity, up 1 point from the previous week.



How many lives is a dollar worth?

The cost of a machine, fixture or broach is no gage of how well they will work together and produce together in any broaching installation—and in no process is proper relationship of tools, fixtures, and machines more vital than in broaching.

The wrong broach, fixture or machine always costs MORE.

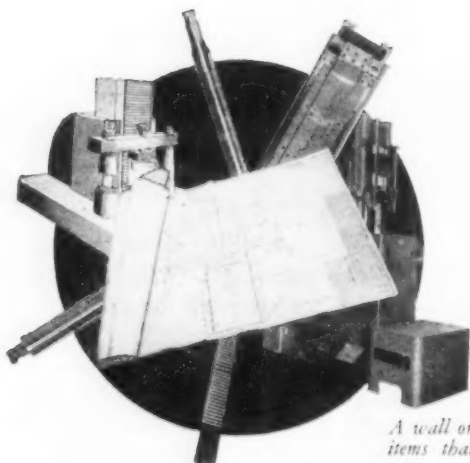
That cost, today, is measured not only in waste of time and money but potentially also in *American lives*.

The time is now. The place—wherever broaching is being adopted to produce more goods—faster . . . with the minimum of precious manpower . . . with the minimum of shut-downs.

To do that, broaching equipment—machine, fixtures, broaches—must be designed, integrated and built to do the job "right the first time."

That's why Colonial is ready and willing to check over your broaching layouts and recommend such changes as appear desirable on the basis of its vast experience with practically every conceivable type of broaching installation.

It costs you nothing. Have Colonial's specialists check broaching equipment or tooling before you release that order.



FOR YOUR TOOL ROOM

A wall or bulletin board poster of DO and DON'T items that should help you reduce broach maintenance cost. No charge. Ask for BN-1250.



Market Briefs

slow deliveries—The recent trend of improvement in deliveries is changing, according to the August report of the Purchasing Agents Assn. of Chicago. Although some members reporting continue to show quick delivery of material, there is an increase in those who report that deliveries have slowed down. Twenty pct of the members reported are paying more for their principal items. This reverses the leveling of prices in the past 3 or 4 months.

strike threat—A strike of 150 men is threatening to halt much of the industrial production in the Birmingham area and already has forced Tennessee Coal, Iron & R.R. Co. to curtail operation. The strikers are conductors and switchmen of the Birmingham Southern R.R., a 35-mile long railroad that serves 60 plants in the district. The men are asking a raise of 95¢ per day. Firemen and engine-men have refused to cross picket lines to operate the trains.

plant postponed—Although the Woodward Iron Co. has been granted a fast tax writeoff for the erection of a \$6,000,000 ammonia manufacturing plant, the board of directors has not decided definitely when construction will begin. Woodward already is conducting an expansion program that includes a new blast furnace, coke ovens, etc., and construction of the ammonia plant may not be started until these are completed next year.

steel orders—Some mills are following widely divergent policies on booking steel orders in advance. One mill is urging its customers to place orders (as far as they are permitted) clear through the third quarter of next year. But another large company is booking orders only through January, except on military items.

won't agree—Wolverine Tube Div., Calumet Consolidated Copper Co., Decatur, Ala., has rejected Walter Reuther's proposal that a UAW strike be ended immediately, with all workers returning without discrimination pending arbitration. The plant resumed operations in late August, under police guard.

steel short—Canada is still facing serious steel shortage and prospects are for a worsening of conditions before there is a change for the better. Some slight easing has been noted recently, with the drop in automobile and appliance sales accounting for at least a part of the supply increase. Defence demands early in 1952 are going to be heavier, however, and probably will take up any slack in commercial needs.

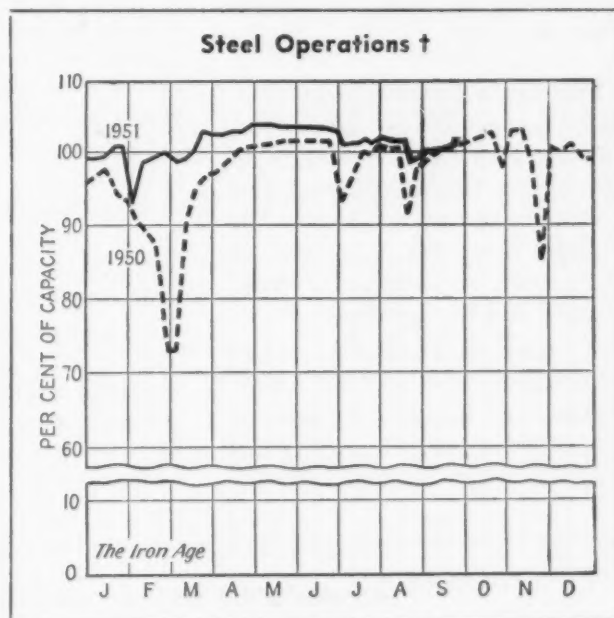
mine car—Operation of the first diesel-electric shuttle car for non-coal mines has been approved by the Bureau of Mines. The shuttle car to meet Bureau specifications has a three-cylinder diesel motor to furnish the generator power to drive two traction motors.

foreign buyers—Indo-China and the Philippine Republic will spend over a half-million dollars in U. S. and France for construction and mining equipment. With Economic Cooperation Administration approval, the Philippines will spend \$455,000, and Indo-China \$104,000.

sulfur drive—An all-out drive by free world nations may end the sulphur shortage threatening the allied defense effort. Forty-six projects in 11 countries are expected to add 3 million long tons to the world supply by the end of 1953.

British steel woes—British steel production so far this year is slightly under that of 1950. American steel imports will be a necessity if the armament drive is not to be slowed. English steelmakers also want a larger share of German scrap steel.

tools—It is anticipated that the government will order 2300 "T" type lathes from machine tool builders. This type lathe with bed at right angles to head stock is adapted to facing large diameters.



District Operating Rates—Per Cent of Capacity †

| Week of | Pittsburgh | Chicago | Youngstown | Philadelphia | West | Buffalo | Cleveland | Detroit | Wheeling | South | Ohio River | St. Louis | East | Aggregate |
|----------|------------|---------|------------|--------------|-------|---------|-----------|---------|----------|-------|------------|-----------|-------|-----------|
| Sept. 9 | 97.0 | 105.5* | 103.0 | 101.0 | 100.0 | 104.0 | 98.5* | 104.0* | 98.0 | 98.0 | 94.0 | 90.0 | 111.0 | 100.0 |
| Sept. 16 | 100.0 | 105.5 | 102.0 | 101.0 | 100.0 | 104.0 | 96.5 | 106.0 | 100.0 | 97.5 | 93.5 | 90.0 | 97.5 | 101.0 |

† Beginning Jan. 1, 1951, operations are based on annual capacity of 104,229,650 net tons.

* Revised.

Nonferrous Markets

Scrap Shortage Perils Production

Smelters run on reduced schedules . . . Increased demands for stockpile releases . . . Tinless tin cans may be next . . . Lead allocations cut . . . Mercury price rises—By Bob Hatschek.

With all striking workers back at their jobs, the metals situation is still very critical. It will probably take at least a month to recover from the strike. Increased demands are being heard for the release of stockpile metals, especially copper and lead. With lead allocations already cut, consumers fear copper reductions may be next.

James J. Russell, president, Revere Copper & Brass Co., insisted last week that an additional 50,000 tons of copper should be released from the stockpile. He revealed that Revere has only 1 week's supply of all types of copper on hand. As a result, the firm is running at only 50 pct of plant capacity.

Shutdowns Imminent—In addition to shortages of virgin ore, scrap shortages continued to plague the industry. Brass and bronze ingot makers across the country fear they may have to shut down completely if more scrap is not forthcoming.

Industry representatives last week asked Office of Price Stabilization to impose ceilings on dealer prices for scrap copper and brass.

Industry Advisers—They claimed that unauthorized purchases and increased use by foundries and other direct consumers were principal factors in the shortage. The ingot makers asked NPA to exercise greater selectivity in scrap allocation and to forbid dealers to accumulate more than 30-day inventories.

Larger tonnages of fired shells and other government scrap were also asked. NPA is now studying these and other recommendations, but had not taken any positive action beyond listening at press time.

World Supply—The amount of foreign copper available to the U. S. in the first half of 1952 is still in doubt, International Materials Conference says, despite a report that the import tonnage would be increased.

Last year 38 pct of copper used in this country came from abroad. Not all the ore contracted for is being received, however, partially because of a recent longshoremen's strike in Chile.

Worldwide control of the short-supply metal is handled by IMC, which is working on a tentative stopgap allocation for the remainder of 1951. It is not known whether this measure will be

agreed upon before the beginning of the fourth quarter.

Too Cheap?—Aluminum scrap continues very short. Operations at smelters have been sharply curtailed, with plants in some areas producing only 1 or 2 days each week. Steelmakers are also feeling the scarcity as a shortage in aluminum notch deoxidizing bars develops at blast furnaces.

Dealers report that the recent NPA revision of M-22 has had little effect on the supply. They admit that scrap owners might be bypassing them to sell directly to primary producers, but are more inclined to blame the low ceiling prices. A price rise may be due.

"Tin" Cans?—Reynolds Metals Co.'s development of new processes for making cans of aluminum (see page 72) may eventually open a large new market for the metal if mass production proves as successful as pilot operations. But large-scale commercial exploitation of the process is not expected soon. Final patent rights haven't yet been secured. And civilian uses of aluminum are restricted to 46 pct of use in '50.

Leaden Gloom—NPA's recent action cutting September lead allocations 35 pct will only make a bad situation worse, trade sources feel. Some adjustment will probably be made between those consumers who have already received their allocations and those who will have to bear the reduction. The Bureau of Mines only deepened the gloom with its announcement that U. S. lead production dropped 6 pct in July.

Mercury Rising—Reluctance of European mercury producers to sell resulted in a strengthened market here. Trading at \$205 to \$210 per flask was going on in fair-sized parcels last week.

NONFERROUS METAL PRICES

| | Sept. 12 | Sept. 13 | Sept. 14 | Sept. 15 | Sept. 17 | Sept. 18 |
|-----------------------------|----------|----------|----------|----------|----------|----------|
| Copper, electro, Conn..... | 24.50 | 24.50 | 24.50 | 24.50 | 24.50 | 24.50 |
| Copper, Lake delivered.... | 24.625 | 24.625 | 24.625 | 24.625 | 24.625 | 24.625 |
| Tin, Straits, New York..... | \$1.03 | \$1.03 | \$1.03 | \$1.03 | \$1.01* | \$1.03 |
| Zinc, East St. Louis..... | 17.50 | 17.50 | 17.50 | 17.50 | 17.50 | 17.50 |
| Lead, St. Louis..... | 16.80 | 16.80 | 16.80 | 16.80 | 16.80 | 16.80 |

*Tentative

Note: Quotations are going prices.

Nonferrous Prices

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 20,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 30.1¢; 4S, 31.5¢; 5S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 7S-O, 7S-OAL, 39.9¢; 0.051 in., 2S, 3S, 31.2¢; 7S-O, 7S-OAL, 35.6¢; 24S-O, 24S-OAL, 41.8¢; 0.032 in., 2S, 3S, 31.4¢; 7S-O, 7S-OAL, 37.1¢; 2S, 3S, 39.3¢; 24S-O, 24S-OAL, 41.7¢; 7S-O, 7S-OAL, 52.2¢.

Plate 1/4 in. and heavier: 2S, 3S-F, 28.3¢; 4S-F, 30.2¢; 5S-F, 31.3¢; 61S-O, 30.8¢; 24S-O, 36.0¢; 7S-O, 42.4¢; 7S-OAL, 38.8¢.

Extruded Solid Shapes: Shape factors 1 to 5, 1.5 to 74.5¢; 12 to 14, 36.9¢ to 89¢; 24 to 36, 38.5¢ to 11.6¢; 36 to 38, 47.2¢ to 11.70¢. Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 37.5¢ to 38.5¢; cold finished, 0.375 to 3 in., 2S-F, 3S-F, 40.5¢ to 55¢.

Screw Machine Stock: Rounds, 11S-T3, 1/4 to 1 1/2 in., 63.5¢ to 42¢; 1/2 to 1 1/4 in., 41.5¢ to 19¢; 1 9/16 to 3 in., 38.5¢ to 36¢; 7S-T4 lower by 1.5¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 3S, 29¢; 5S, 48¢ to 35¢; 5S, 51¢ to 61¢; 17S-T4, 84¢ to 37.5¢; 61S-T4, 48.5¢ to 17¢; 7S-T6, 84¢ to 67.5¢.

Extruded Tubing, Rounds: 6S-T-S, OD in. 1 1/4 to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 4 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 43.5¢.

Rolling Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., 1.42¢; 96 in., 1.52¢; 120 in., 1.62¢; 144 in., 1.72¢. Gauge 0.24 x 28 in., 72 in., 1.87¢; 96 in., 1.83¢; 120 in., 1.82¢; 144 in., 1.75¢. Coiled Sheet: 0.019 in. x 28 in., 14.2¢ per lb; 0.024 in. x 28 in., 26.9¢ lb.

Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FSI-O, 1/4 in., 63¢; 3/16 in., 55¢; 1/8 in., 47¢; B & S Gauge 10, 68¢; 12, 72¢; 14, 75¢; 16, 85¢; 18, 95¢; 20, 1.05¢; 22, 1.17¢; 24, 1.27¢. Specification grade higher. Base: 50,000 lb.

Extruded Round Rod: M, diam in. 1/4 to 1 1/4 in., 74¢; 1/2 to 3/4 in., 57.5¢; 1 1/4 to 1.749 in., 63¢; 2 1/4 to 5 in., 48.5¢. Other alloys higher. Base Up to 1/4 in. diam, 10,000 lb; 1/4 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M, in weight per ft, for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 69.3¢; 0.50 to 0.59 lb, 8.6 in., 66.7¢; 1.8 to 2.59 lb, 19.5 in., 63.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/4 lb, 10,000 lb; 1/4 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, 1/4 in. to 5/16, 1.40¢; 5/16 to 3/8, 1.26¢; 3/8 to 1/2, 1.40¢; 1/2 to 2 in., 76¢; 0.165 to 0.219, 5/8 to 1, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in. in.: Up to 1 1/4 in., 10,000 lb; 1 1/4 to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheet and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

Nickel and Monel

(Base prices, f.o.b., mill)

"A" Nickel Monel
Sheets, cold rolled..... 77 60 1/2
Strip, cold-rolled..... 83 63 1/2
Rods and bars..... 73 58 1/2
Angles, hot-rolled..... 73 58 1/2
Plates..... 75 59 1/2
Seamless tubes..... 106 93 1/2
Shot and blocks..... 53 1/2

Copper, Brass, Bronze

(Freight prepaid on 200 lb)

Copper..... 41.68
Copper, h-r..... 37.53
Copper, drawn..... 38.78
Low brass..... 39.67
Yellow brass..... 38.28
Red brass..... 40.14
Naval brass..... 42.20
Leaded copper..... 41.58
Com'l bronze..... 41.13
Mang. bronze..... 46.92
Phos. bronze..... 61.07
Muntz metal..... 41.18
Ni silver, 10-90..... 49.82

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed..... 19.00
Aluminum pig..... 18.00
Antimony, American, Laredo, Tex..... 42.00
Beryllium copper, 3.75-4.25% Be..... 11.56
Beryllium aluminum 5% Be, Dollars per lb contained Be..... \$69.00
Bismuth, ton lots..... \$2.25
Cadmium, del'd..... \$2.55
Cobalt, 97-99% (per lb)..... \$2.10 to \$2.17
Copper, electro, Conn. Valley..... 24.50
Copper, Lake, delivered..... 24.625
Gold, U. S. Treas., dollars per oz..... \$35.00
Indium, 99.8%, dollars per troy oz..... \$2.25
Iridium, dollars per troy oz..... \$200
Lead, St. Louis..... 16.80
Lead, New York..... 17.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb..... 24.50
Magnesium, sticks, 100 to 500 lb, 42.00 to 44.00
Mercury, dollars per 76-lb flask, f.o.b. New York..... \$205-\$210
Nickel electro, f.o.b. N.Y. warehouse 59.53
Nickel oxide sinter, at Copper Cliff, Ont., contained nickel..... 52.75
Palladium, dollars per troy oz..... \$24.00
Platinum, dollars per troy oz..... \$90 to \$92
Silver, New York, cents per oz..... 90.16
Tin, New York..... \$1.03
Titanium, sponge..... \$5.00
Zinc, East St. Louis..... 17.50
Zinc, New York..... 18.25
Zirconium copper, 50 pct..... \$6.20

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)
85-5-5-5 ingot
No. 115..... 27.25
No. 120..... 26.75
No. 123..... 26.25
80-10-10 ingot
No. 305..... 32.25
No. 315..... 30.25
88-10-2 ingot
No. 210..... 40.00
No. 215..... 38.50
No. 245..... 33.50
Yellow ingot
No. 405..... 23.25
Manganese bronze
No. 421..... 29.50

Aluminum Ingot

(Cents per lb, 10,000 lb and over)
95-5 aluminum-silicon alloys
0.30 copper, max..... 20.6
0.60 copper, max..... 20.4
Piston alloys (No. 122 type)..... 21.2
No. 12 alum. (No. 2 grade)..... 19.5
108 alloy..... 20.6
195 alloy..... 20.8
13 alloy..... 20.8
ASX-679..... 20.5

Steel deoxidizing aluminum, notch-bar granulated or shot
Grade 1—95-97 1/2%..... 18.00
Grade 2—92-95%..... 17.75
Grade 3—90-92%..... 17.25
Grade 4—85-90%..... 16.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper
Cast, oval, 15 in. or longer..... 37.84
Electrodeposited..... 33.34
Flat rolled..... 38.34
Forged ball anodes..... 43
Brass, 80-20
Cast, oval, 15 in. or longer..... 34.4
Zinc, oval..... 26 1/2
Ball anodes..... 25 1/2
Nickel 99 pct plus
Cast..... 76.00
Rolled, depolarized..... 77.00
Cadmium..... \$2.80
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn..... 97 1/2

Chemicals

(Cents per lb, f.o.b. shipping points)
Copper cyanide, 100 lb drum..... 63
Copper sulfate, 99.5 crystals, bbl..... 12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed..... 20 1/2
Nickel chloride, 375 lb drum..... 27 1/2
Silver cyanide, 100 oz lots, per oz..... 67 1/2
Sodium cyanide, 96 pct domestic 200 lb drums..... 19.25
Zinc cyanide, 100 lb drum..... 47.7

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1/2¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

| | Heavy | Turnings |
|---------------------|--------|----------|
| Copper..... | 21 1/2 | 20 1/2 |
| Yellow Brass..... | 19 1/2 | 17 1/2 |
| Red brass..... | 20 1/2 | 19 1/2 |
| Comm. bronze..... | 20 1/2 | 19 1/2 |
| Mang. bronze..... | 18 1/2 | 17 1/2 |
| Brass rod ends..... | 18 1/2 | 17 1/2 |

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)
No. 1 copper wire..... 19.25
No. 2 copper wire..... 17.75
Light copper..... 16.50
Refinery brass..... 17.25*
Radiators..... 15.50
* Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)
No. 1 copper wire..... 19.25
No. 2 copper wire..... 17.75
Light copper..... 16.50
No. 1 composition..... 19.50
No. 1 comp. turnings..... 19.25
Rolled brass..... 15.50
Brass pipe..... 16.50
Radiators..... 15.50

Aluminum
Mixed old cast..... 9.75
Mixed new clips..... 11.00
Mixed turnings, dry..... 9.50
Pots and pans..... 9.25

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass
No. 1 heavy copper and wire..... 18 1/2—19 1/2
No. 2 heavy copper and wire..... 17 1/2—18 1/2
Light copper..... 16—16 1/2
New type shell cuttings..... 16—16 1/2
Auto radiators (unsweated)..... 14 1/4—14 1/2
No. 1 composition..... 17 1/2—18
No. 1 composition turnings..... 16 1/2—17 1/2
Unlined red car boxes..... 15 1/2—16
Cocks and faucets..... 12—12 1/2
Mixed heavy yellow brass..... 15—15 1/2
Old rolled brass..... 16—16 1/2
Brass pipe..... 16—16 1/2
New soft brass clippings..... 15 1/2—16
Brass rod ends..... 15 1/2—16
No. 1 brass rod turnings..... 15—15 1/2

Aluminum

Alum. pistons and struts..... 6 1/2—7 1/2
Aluminum crankcases..... 7 1/2—8
2S aluminum clippings..... 10 1/2
Old sheet and utensils..... 7 1/2—8
Borings and turnings..... 5—6
Misc. cast aluminum..... 7 1/2—8
Dural clips (24S)..... 10—11

Zinc

New zinc clippings..... 12 1/2—12 3/4
Old zinc..... 9—9 1/2
Zinc routings..... 5—6
Old die cast scrap..... 5 1/2—6

Nickel and Monel

Pure nickel clippings..... 35—36
Clean nickel turnings..... 35—36
Nickel anodes..... 35—36
Nickel rod ends..... 35—36
New Monel clippings..... 28—29
Clean Monel turnings..... 20—21
Old sheet Monel..... 28—29
Nickel silver clippings, mixed..... 13—14
Nickel silver turnings, mixed..... 12—13

Lead

Soft scrap, lead..... 14—14 1/2
Battery plates (dry)..... 9 1/2—10

Magnesium

Segregated solids..... 15—16
Castings..... 14—15

Miscellaneous

Block tin..... 85—90
No. 1 pewter..... 60—65
No. 1 auto babbitt..... 48—50
Mixed common babbitt..... 16 1/2—16 3/4
Solder joints..... 23—24
Siphon tops..... 48—50
Small foundry type..... 20 1/2—21
Monotype..... 18 1/2—18 3/4
Lino. and stereotype..... 17 1/2—18
Electrotype..... 15—15 1/2
Hand picked type shells..... 8—9
Lino. and stereo. dross..... 8 1/2—9
Electro. dross..... 5—5 1/2

Iron and Steel Scrap Markets

Keep Scrap Lanes Open in Winter

Winter slowup must be kept to minimum . . . Trade must try to maintain normal collections in abnormal period . . . Hot pace in summer allows no stockpiling . . . List stockpile estimates.

The wedge of necessity must be used by scrap men to keep open as wide as possible scrap sources that normally contract in the winter. The trade must encourage a boom harvest of farm scrap before cold weather locks in the market. They must also fight winter and somehow try to keep up normal collections in an abnormal period. The most important thing to scrap now is what kind of winter we will have—mild or frigid.

Inevitably there will be a slow-up. But it must be kept to a minimum. If shipping lanes freeze up, rail routes must be substituted. Traditional winter hibernation must be forgotten. Prompt industrial scrap should not be allowed to accumulate. The small collectors will this year again not care to brave the snow to bring in their small scrap lots. This loss must be shrugged off. Dealers must dig into the job of getting more scrap out by personal initiative. They must pay more visits to scrap sources—such as auto graveyards.

Brunt of the mammoth job of collecting enough scrap to bring mills safely through the winter will go to scrap men. Scrap campaigns will help considerably, bringing more business than might have been expected by the trade. But the backbone of scrap movement is still the scrap-pile.

Leanness of iron and steel scrap stockpiles is frightening even those optimists who say that the scrap always manages to show up when it is needed no matter how many gloomy predictions are made. This time, though, summer has flashed by and mills working at top capacity have quickly consumed the record tonnage brought forth by the scrap trade.

An IRON AGE survey estimating

available stocks in steelmaking centers highlights the scrap poverty.

Chicago inventory runs from 2 weeks to a month—with emphasis on the 2 weeks. Cleveland mills have about 10 to 12 days of scrap on the ground. Pittsburgh has a shaky 10 day inventory, which is slipping a little. Detroit is on safer ground with stockpiles of from 2 to 3 weeks.

Pittsburgh — The mills are again losing inventory. One producer was forced to ship scrap to a sister plant in another district. The aided mill was down to a 24-hour inventory. Stocks here are estimated at around 10 days. Phil Murray, president of the CIO and United Steelworkers, sent a letter to 2200 local unions urging formation of scrap salvage committees.

Chicago — Scrap inventories remain pretty much at the same level they were a month ago. One fairly large consumer has slipped off a bit from the month's supply it had on hand several weeks ago. On the average inventories are running anywhere from 2 weeks to a month. Inventories at the U. S. Steel Co. are at about one-fourth of normal. Little hope is held for improving stockpiles before winter.

Philadelphia — Scrap supplies are still tight. Cast supplies are good. Consequently foundries are not accepting much upgraded material. Some allocations are still floating around this area. Inventories are holding their own but not gaining. As in other areas, No. 1 and No. 2 steel is almost unobtainable as such.

New York — Scrap movement has picked up a little—a trifling little. Inquiries from mills have picked up quite a lot. No. 1 and No. 2 steel has virtually disappeared from the market. It may be showing its head as another category. Mills are in no position to refuse scrap now.

Detroit — Steel mill stocks hover about the 15 day mark. Any slowup in receipts can immediately lower them dangerously. Spread of allocations this winter to distribute a short supply is foreseen as increasing sharply. Talk of scrap loss resulting from auto production cutbacks still continue.

Cleveland—Dealers here report mills still holding their own. Situation in northeastern and southern Ohio more critical. Mills at Massillon, Warren and Portsmouth feeling a tighter squeeze, with less than a week's supply. Survey made by NPA here shows that 28 of 42 largest auto wreckers have low inventories.

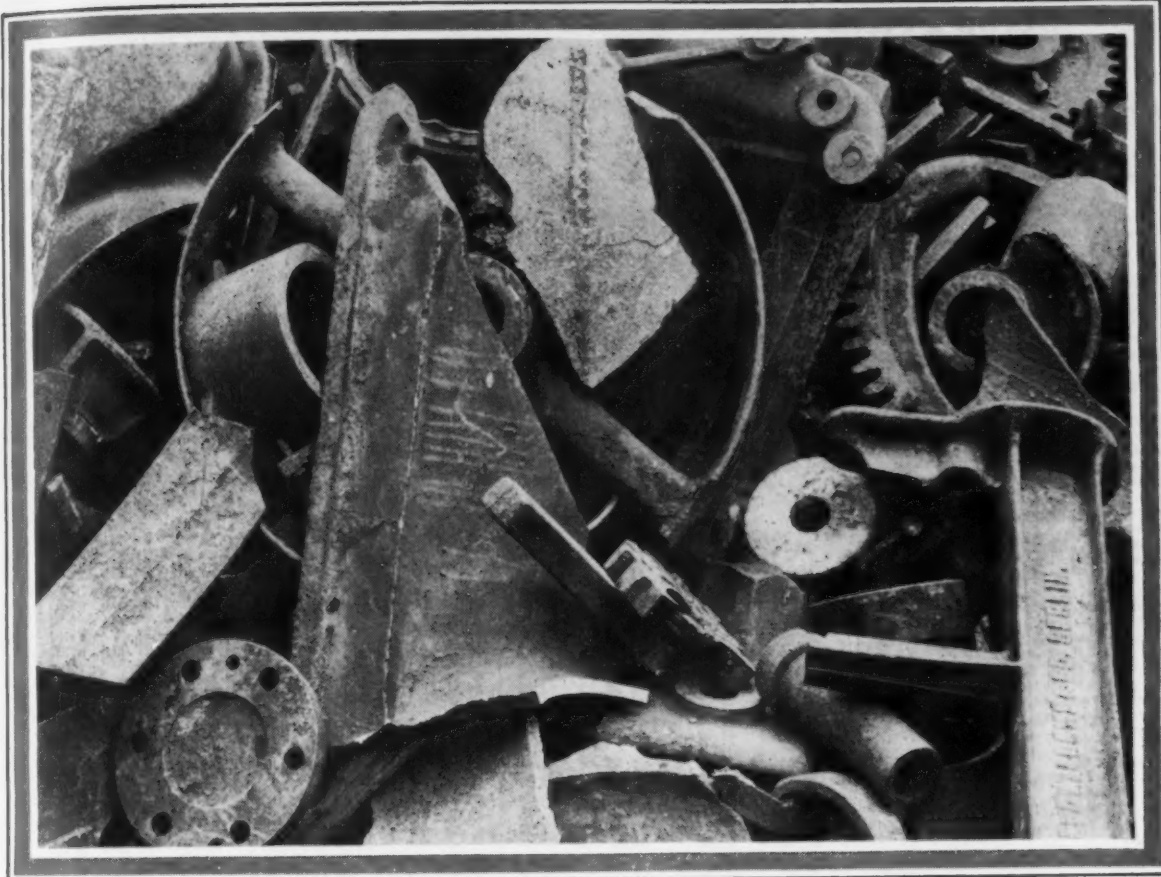
St. Louis—The movement of scrap iron to this industrial district has been disappointingly slow. The expected improvement has not materialized. Industrial sections have experienced cutbacks reducing the available supply, and the rural areas are producing little. Scrap stocks are losing ground.

Birmingham—Despite a slight pick-up in scrap movement, there is so little free scrap available it does not begin to fill demands. Dealers expect some improvement next month. Even mills with allotments complain they are not getting enough heavy melting and the supply of cast and electric furnace grade steel is shorter.

Cincinnati—Demand for openhearth and electric furnace grades remains heavy with practically all allocations going to Newport Steel in Kentucky. There is big source of auto scrap here but most dealers can't handle it. It is reported auto wreckers are planning their own yard to cut and move auto scrap. One large yard with rail siding may be made available for their use.

Boston—The cast market is just a little less active, but scrap continues to move in volume. Dealers still hope for some more clarification on the recent rulings on water shipments, but as it stands now, the only method of shipment is by freight.

Buffalo — Dealers have completed shipments on allocation orders of two Valley consumers. After a cutoff, local mills are again receiving material. The lull in water shipments was also broken. Two barges arrived via canal from the Eastern Seaboard.



#1 machinery cupola cast

use:

#1 Machinery (Cupola Cast) is the bellwether grade of scrap consumed in the process of Cupola charging. It is prepared by the dealer under a drop to Cupola size. Controlled weight enables this scrap to be handled by one man. It has a definite advantage in mixtures because the analyses are generally within narrow ranges and form a stable part of the mixture.

source:

Cast iron derived from industrial, automotive, agricultural and public utility machinery.

This is one of a series illustrating the many and varied types of scrap required in the making of iron and steel for every use. Our national organization, manned by personnel who is steeped in every phase of scrap knowledge, is ready to meet your every scrap problem.

specifications:

#1 Machinery (Cupola Cast). To contain all kinds of machinery and similar cast iron scrap, nothing under 10 pounds, not over 24" x 30" and no piece to weigh over 150 pounds. To contain no brake shoes, cast iron soil pipe, stove scrap or burnt iron of any description and to be free from steel parts.

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP LURIA BROTHERS AND COMPANY, INC.

PLANTS

LEBANON, PENNA.
READING, PENNA.
DETROIT (ECORSE),
MICHIGAN
MODENA, PENNA.
PITTSBURGH, PENNA.
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MAIN OFFICE

LINCOLN-LIBERTY BLDG.
Philadelphia 7, Penna.



OFFICES

| | | | |
|--|---|--|--|
| BIRMINGHAM, ALA. Empire Building | CHICAGO, ILLINOIS 100 W. Monroe St. | HOUSTON, TEXAS 1114 Texas Av. Bldg. | PITTSBURGH, PA. Oliver Building |
| BOSTON, MASS. Statler Building | CLEVELAND, OHIO 1022 Midland Bldg. | LEBANON, PENNA. Luria Building | PUEBLO, COLORADO 334 Colorado Bldg. |
| BUFFALO, N. Y. Genesee Building | DETROIT, MICHIGAN 2011 Book Building | NEW YORK, N. Y. 100 Park Avenue | READING, PENNA. Luria Building |
| ST. LOUIS, MISSOURI 2052 Railway Exchange Bldg. | SAN FRANCISCO, CALIFORNIA Pacific Gas & Elec. Co., Bldg. | | |

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Scrap Prices

Iron and Steel

SCRAP PRICES

(Maximum basing point prices, per gross ton, as set by OPS, effective Feb. 7, 1951. Shipping point and delivered prices calculated as shown below.)

| GRADES | OPS No. | Basing Points | | | | | | | | | | | | | | | |
|-----------------------------------|---------------|---------------|-----------|--------------|---------|---------|----------|---------|------------|---------|--------------|---------|---------|-----------|---------|------------|---------|
| | | Pittsburgh | Johnstown | Brackenridge | Butler | Midland | Monessen | Sharon | Youngstown | Canton | Steubenville | Warren | Wellton | Cleveland | Buffalo | Cincinnati | Midtown |
| No. 1 heavy melting | 1 | \$44.00 | \$44.00 | \$43.00 | \$42.50 | \$42.00 | \$41.00 | \$41.00 | \$41.00 | \$41.00 | \$41.00 | \$41.00 | \$41.00 | \$41.00 | \$41.00 | \$41.00 | \$41.00 |
| No. 2 heavy melting | 2 | 42.00 | 42.00 | 41.00 | 40.50 | 40.00 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 |
| No. 1 busheling | 3 | 44.00 | 44.00 | 43.00 | 42.50 | 42.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 |
| No. 1 bundles | 4 | 44.00 | 44.00 | 43.00 | 42.50 | 42.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 | 41.00 |
| No. 2 bundles | 5 | 41.00 | 41.00 | 40.00 | 39.50 | 39.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 |
| Machine shop turnings | 6 | 34.00 | 34.00 | 33.00 | 32.50 | 32.00 | 31.00 | 31.00 | 31.00 | 31.00 | 31.00 | 31.00 | 31.00 | 31.00 | 31.00 | 31.00 | 31.00 |
| Mixed borings and turnings | 7 | 38.00 | 38.00 | 37.00 | 36.50 | 36.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 |
| Shoveling turnings | 8 | 38.00 | 38.00 | 37.00 | 36.50 | 36.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 |
| Cast iron borings | 10 | 38.00 | 38.00 | 37.00 | 36.50 | 36.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 |
| No. 1 chemical borings | 26 | 41.00 | 41.00 | 40.00 | 39.50 | 39.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 | 38.00 |
| Forge crops | 11 | 51.50 | 51.50 | 50.50 | 50.00 | 49.50 | 48.50 | 48.50 | 48.50 | 48.50 | 48.50 | 48.50 | 48.50 | 48.50 | 48.50 | 48.50 | 48.50 |
| Bar crops and plate | 12 | 49.00 | 49.00 | 48.00 | 47.50 | 47.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 |
| Punchings and plate | 14 | 46.50 | 46.50 | 45.50 | 45.00 | 44.50 | 43.50 | 43.50 | 43.50 | 43.50 | 43.50 | 43.50 | 43.50 | 43.50 | 43.50 | 43.50 | 43.50 |
| Electric furnace bundles | 15 | 46.00 | 46.00 | 45.00 | 44.50 | 44.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 |
| Cut struct., plate, 3 ft and less | 16 | 47.00 | 47.00 | 46.00 | 45.50 | 45.00 | 44.00 | 44.00 | 44.00 | 44.00 | 44.00 | 44.00 | 44.00 | 44.00 | 44.00 | 44.00 | 44.00 |
| Cut struct., plate, 1 ft and less | 17 | 49.00 | 49.00 | 48.00 | 47.50 | 47.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 |
| Cut struct., plate, 1 ft and less | 18 | 50.00 | 50.00 | 49.00 | 48.50 | 48.00 | 47.00 | 47.00 | 47.00 | 47.00 | 47.00 | 47.00 | 47.00 | 47.00 | 47.00 | 47.00 | 47.00 |
| Foundry steel, 2 ft and less | 20 | 46.00 | 46.00 | 45.00 | 44.50 | 44.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 | 43.00 |
| Foundry steel, 1 ft and less | 21 | 48.00 | 48.00 | 47.00 | 46.50 | 46.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 |
| Heavy trimmings | 24 | 43.00 | 43.00 | 42.00 | 41.50 | 41.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 | 40.00 |
| No. 1 RR heavy melting | RR 1 | 48.00 | 48.00 | 47.00 | 46.50 | 46.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 |
| Scrap rails, random lengths | RR 14 | 48.00 | 48.00 | 47.00 | 46.50 | 46.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 |
| Scrap rails, 3 ft and less | RR 16 | 51.00 | 51.00 | 50.00 | 49.50 | 49.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 |
| Scrap rails, 2 ft and less | RR 17 | 52.00 | 52.00 | 51.00 | 50.50 | 50.00 | 49.00 | 49.00 | 49.00 | 49.00 | 49.00 | 49.00 | 49.00 | 49.00 | 49.00 | 49.00 | 49.00 |
| Scrap rails, 18 in. and less | RR 18 | 54.00 | 54.00 | 53.00 | 52.50 | 52.00 | 51.00 | 51.00 | 51.00 | 51.00 | 51.00 | 51.00 | 51.00 | 51.00 | 51.00 | 51.00 | 51.00 |
| Revolving rails | RR 15 | 53.00 | 53.00 | 52.00 | 51.50 | 51.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 | 50.00 |
| Uncut tires | RR 20 | 48.00 | 48.00 | 47.00 | 46.50 | 46.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 |
| Cut tires | RR 21 | 51.00 | 51.00 | 50.00 | 49.50 | 49.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 |
| Cut bolsters and side frames | RR 23 | 49.00 | 49.00 | 48.00 | 47.50 | 47.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 | 46.00 |
| RR specialties | RR 24, 28, 29 | 51.00 | 51.00 | 50.00 | 49.50 | 49.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 |
| Solid steel axles | RR 25 | 58.00 | 58.00 | 57.00 | 56.50 | 56.00 | 55.00 | 55.00 | 55.00 | 55.00 | 55.00 | 55.00 | 55.00 | 55.00 | 55.00 | 55.00 | 55.00 |
| No. 3 steel wheels | RR 27 | 51.00 | 51.00 | 50.00 | 49.50 | 49.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 | 48.00 |

Cast Scrap

(F.o.b. all shipping points)

| Grades | OPS No. | |
|--------------------------|---------|---------|
| Cupola cast | 1 | \$49.00 |
| Charging box cast | 2 | 47.00 |
| Heavy breakable cast | 3 | 45.00 |
| Cast iron brake shoes | 5 | 41.00 |
| Stove plate | 6 | 46.00 |
| Clean auto cast | 7 | 52.00 |
| Unstripped motor blocks | 8 | 43.00 |
| Cast iron car wheels | 9 | 47.00 |
| Malleable | 10 | 55.00 |
| Drop broken mach'y. cast | 11 | 52.00 |

Ceiling price of clean cast iron foundry runouts or prepared cupola drops is 75 pct of corresponding grade.

SWITCHING DISTRICTS—These basing points include the indicated switching districts: Pittsburgh; Bessemer, Homestead, Duquesne, Munhall, Cincinnati; Newport, St. Louis; Granite City, East St. Louis, Madison, and Federal, Ill. San Francisco; South San Francisco, Niles, Oakland, Claymont; Chester, Chicago; Garz.

SHIPPING POINT PRICES (Except RR scrap)—For shipping points within basing points, the ceiling shipping point price is the basing point price, less switching charge. The ceiling for shipping points outside basing points is the basing point price yielding the highest shipping point price, less the lowest established freight charge. Dock charge, where applicable, is \$1.25 per gross ton except: Memphis, 95c; Great Lakes ports, \$1.50, and New England ports, \$1.75. Maximum shipping point price on No. 1 heavy melting steel in New York City is \$36.99 per gross ton with set differentials for other grades. Hudson and Bergen County, N. J., shipping point prices are computed from Bethlehem basing point. All New Jersey computations use all-rail transport. Ceiling need not fall below \$32 per gross ton for No. 1 heavy melting steel, with set differentials for other grades. Cast scrap shipping point prices are given in table.

DELIVERED PRICES (RR scrap)—Ceiling on-line price of a RR operating in a basing point is the top in the highest priced basing

point in which the RR operates. For off-line prices, RR's not operating in basing point, non-operating RR's, and RR scrap sold by someone other than a RR see text of order, THE IRON AGE, Feb. 8, 1951, p. 137-C.

DELIVERED PRICES (Except RR scrap)—Ceiling is the shipping point price plus actual freight charge, tax included. Dock charges, where applicable, are as above.

UNPREPARED SCRAP—Ceiling price is \$8 a ton less than prepared base grades (No. 1 heavy & No. 1 RR heavy). Scrap suitable for compressing into No. 1 bundles is \$6 less than No. 1 bundles; suitable for compressing into No. 2 bundles, \$8 less than No. 2 bundles. For cast material requiring special preparation, price is breakable cast less preparation costs.

COMMISSIONS—Brokers are permitted a maximum of \$1 per gross ton commission which must be separate on the bill.

ALLOY PREMIUMS—These alloy extras are permitted: Nickel; \$1.25 may be added to price of No. 1 heavy for each 0.25 pct nickel between 1 and 5.25 pct. Molybdenum; \$2 may be added to price of No. 1 heavy for molybdenum over 0.15 pct, \$3 for content over 0.65 pct. Manganese; \$4 may be added to price of No. 1 heavy or No. 1 RR heavy for content over 10 pct if scrap is in sizes over 8 x 12 x 24 in., \$14 if less than 8 x 12 x 24 in. Manganese premium applicable only if sold for electric furnace use or on NPA allocation. Silicon; electric furnace and foundry grade adjustments are not applicable if silicon content is between 0.5 and 1.75 pct. Chromium; \$1 may be added if scrap conforms to SAE 52100 analysis. Multiple Alloys; if scrap contains two premium alloy elements, total premium may not exceed ceiling premium for any one contained alloy.

RESTRICTIONS ON USE—Ceiling prices on some scrap items may fluctuate with use by consumers. If some scrap is purchased for its established specialized use, the ceiling price set in the order stands. But if some special grades are purchased for other uses, the ceiling price charge shall be the price of the scrap grade being substituted. For example, the price established for Grade 28 (wrought iron) may be charged only when sold to a producer of wrought iron. Otherwise the ceiling price shall not exceed the ceiling price for the corresponding grade of basic openhearth. Re-

strictions on use are placed on the following grades: Chemical borings, wrought iron and re-rolling rails, cupola cast, billet, bloom, and forge crops, Nos. 1 and 2 chemical borings. Ceiling prices on billet bloom and forge crops, alloy-free turnings, and heavy turnings may be charged only when shipped directly from industrial producer. NPA prohibits openhearth users from buying electric furnace grades. Nos. 11 through 18, foundry grades, Nos. 20 and 21 and cast grades, 1, 7, 9 and 11.

CEILING INTRANSIT PREPARATION CHARGES (Dollars per gross ton)

| | |
|---|---------|
| No. 1 heavy; No. 2 heavy; No. 1 RR heavy; No. 2 RR heavy; No. 1 busheling; No. 2 bundles; electric furnace bundles | \$ 8.00 |
| No. 1 bundles; briquetted turnings or cast iron borings; No. 1 RR sheet scrap | 6.00 |
| Crushing machine shop turnings | 3.00 |
| Bar crops and plate, cast steel, punchings and plate, cut structural and plate, 3 ft and under, foundry steel, 2 ft and under, wrought iron | 10.00 |
| Structural, plate scrap, 2 ft and less, foundry steel 1 ft and less | 11.00 |
| Structural and plate scrap, 1 ft and less | 12.00 |
| Rails, 3 ft & less; cut tires; cut bolsters & side frames | 4.00 |
| Rails, 2 ft & less | 5.00 |
| Rails, 18 in. & less | 7.00 |

Hamilton, Ontario

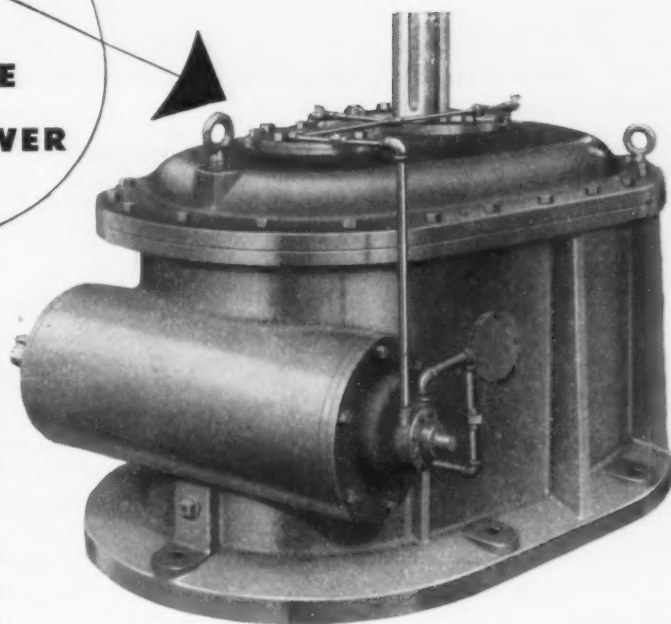
(Consumers buying prices, del'd gross ton)

| | |
|------------------------------------|----------------|
| Hvy. melting steel | \$35.00 |
| No. 1 bundles | 35.00 |
| No. 2 bundles | 34.50 |
| Mechanical bundles | 33.00 |
| Mixed, steel scrap | 31.00 |
| Rails, remelting | 35.00 |
| Rails, re-rolling | 35.00 |
| Bushelings | 33.00 |
| Bushelings, prepared new factory | 33.00 |
| Bushelings, unprepared new factory | 29.00 |
| Short steel turnings | 29.00 |
| Mixed borings, turnings | 29.00 |
| Cast scrap | 58.00 to 60.00 |

have you a drive problem?

A FOOTE BROS.

**WORM-HELICAL DRIVE
MAY PROVIDE THE ANSWER**



● Rugged strength, the ability to stand up under punishing loads, the highest possible efficiency — these are characteristics of Foote Bros. Worm-Helical Drives.

Input shafts are horizontal, output shafts vertical, up or down — making these units ideal for use in chemical plants, pulp mills or wherever materials must be agitated or mixed.

Foote Bros. Worm-Helical Drives are available in ratios from approximately 25 up to 285 to 1—capacities up to 128 h.p. See your Foote Bros. representative or mail the coupon for information.

FOOTE BROS. GEAR AND MACHINE CORPORATION
4545 S. Western Boulevard • Chicago 9, Illinois

Whatever your requirements in power transmission, you will find exactly the drive best suited to your needs in the complete Foote Bros. line of enclosed gear drives and gear-motors. Check the coupon indicating the drive in which you are interested.

FOOTE BROS.

Better Power Transmission Through Better Gears

Foote Bros. Gear and Machine Corporation
Dept. M, 4545 S. Western Boulevard, Chicago 9, Illinois

Please send bulletins on drives checked below.

- ☐ WORM-HELICAL DRIVES
- ☐ LINE-O-POWER STRAIGHT LINE DRIVES
- ☐ MAXIPOWER HELICAL GEAR DRIVES
- ☐ HYGRADE WORM GEAR DRIVES
- ☐ FOOTE BROS.-LOUIS ALLIS GEARMOTORS

Name.....
Company..... Position.....
Address.....
City..... Zone..... State.....

September 20, 1951

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Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

| Flat-Rolled Steel: | Sept. 18, 1951 | Sept. 11, 1951 | Aug. 21, 1951 | Sept. 19, 1950 |
|----------------------------|----------------|----------------|---------------|----------------|
| (cents per pound) | | | | |
| Hot-rolled sheets | 3.60 | 3.60 | 3.60 | 3.35 |
| Cold-rolled sheets | 4.35 | 4.35 | 4.35 | 4.10 |
| Galvanized sheets (10 ga) | 4.80 | 4.80 | 4.80 | 4.40 |
| Hot-rolled strip | 3.50 | 3.50 | 3.50 | 3.25 |
| Cold-rolled strip | 4.75 | 4.75 | 4.75 | 4.21 |
| Plate | 3.70 | 3.70 | 3.70 | 3.50 |
| Plates wrought iron | 7.85 | 7.85 | 7.85 | 7.85 |
| Stains C-R strip (No. 302) | 36.75 | 36.75 | 36.75 | 34.50 |

Tin and Ternplate:

| | | | | |
|------------------------------|--------|--------|--------|--------|
| (dollars per base box) | | | | |
| Tinplate (1.50 lb.) cokes | \$8.70 | \$8.70 | \$8.70 | \$7.50 |
| Tinplate, electro (0.50 lb.) | 7.40 | 7.40 | 7.40 | 6.60 |
| Special coated mfg. ternes | 7.50 | 7.50 | 7.50 | 6.35 |

Bars and Shapes:

| | | | | |
|-------------------------|-------|-------|-------|-------|
| (cents per pound) | | | | |
| Merchant bars | 3.70 | 3.70 | 3.70 | 3.45 |
| Cold finished bars | 4.55 | 4.55 | 4.55 | 4.145 |
| Alloy bars | 4.30 | 4.30 | 4.30 | 3.95 |
| Structural shapes | 3.65 | 3.65 | 3.65 | 3.40 |
| Stainless bars (No.302) | 31.50 | 31.50 | 31.50 | 30.00 |
| Wrought iron bars | 9.50 | 9.50 | 9.50 | 9.50 |

Wire:

| | | | | |
|-------------------|------|------|------|------|
| (cents per pound) | | | | |
| Bright wire | 4.85 | 4.85 | 4.85 | 4.50 |

Rails:

| | | | | |
|----------------------|--------|--------|--------|--------|
| (dollars per 100 lb) | | | | |
| Heavy rails | \$3.60 | \$3.60 | \$3.60 | \$3.40 |
| Light rails | 4.00 | 4.00 | 4.00 | 3.75 |

Semifinished Steel:

| | | | | |
|-----------------------------|---------|---------|---------|---------|
| (dollars per net ton) | | | | |
| Rerolling billets | \$56.00 | \$56.00 | \$56.00 | \$54.00 |
| Slabs, rerolling | 56.00 | 56.00 | 56.00 | 54.00 |
| Forging billets | 66.00 | 66.00 | 66.00 | 63.00 |
| Alloy blooms billets, slabs | 70.00 | 70.00 | 70.00 | 66.00 |

Wire Rod and Skelp:

| | | | | |
|-------------------|------|------|------|------|
| (cents per pound) | | | | |
| Wire rods | 4.10 | 4.10 | 4.10 | 3.85 |
| Skelp | 3.35 | 3.35 | 3.35 | 3.15 |

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

| Pig Iron: | Sept. 18, 1951 | Sept. 11, 1951 | Aug. 21, 1951 | Sept. 19, 1950 |
|-----------------------------|----------------|----------------|---------------|----------------|
| (per gross ton) | | | | |
| No. 2 foundry, del'd Phila. | \$57.77 | \$57.77 | \$57.77 | \$51.70 |
| No. 2, Valley furnace | 52.50 | 52.50 | 52.50 | 46.50 |
| No. 2, Southern Cin'ti | 55.58 | 55.58 | 55.58 | 49.08 |
| No. 2, Birmingham | 48.88 | 48.88 | 48.88 | 42.38 |
| No. 2, foundry, Chicago† | 52.50 | 52.50 | 52.50 | 46.50 |
| Basic del'd Philadelphia | 56.92 | 56.92 | 56.92 | 50.92 |
| Basic, Valley furnace | 52.00 | 52.00 | 52.00 | 46.00 |
| Malleable, Chicago† | 52.50 | 52.50 | 52.50 | 46.50 |
| Malleable, Valley | 52.50 | 52.50 | 52.50 | 46.50 |
| Charcoal, Chicago | 70.56 | 70.56 | 70.56 | 68.56 |
| Ferromanganese† | 186.25 | 186.25 | 186.25 | 173.40 |

†The switching charge for delivery to foundries in the Chicago district is \$1 per ton.
‡Average of U. S. prices quoted on Ferroalloy page.

Scrap:

| | | | | |
|--------------------------|----------|----------|----------|---------|
| (per gross ton) | | | | |
| No. 1 steel, Pittsburgh | \$44.00* | \$44.00* | \$44.00* | \$43.75 |
| No. 1 steel, Phila. area | 42.50* | 42.50* | 42.50* | 38.50 |
| No. 1 steel, Chicago | 42.50* | 42.50* | 42.50* | 40.00 |
| No. 1 bundles, Detroit | 41.15* | 41.15* | 41.15* | 37.50 |
| Low phos. Young'n | 46.50* | 46.50* | 46.50* | 46.25 |
| No. 1 cast, Pittsburgh | 49.00† | 49.00† | 49.00† | 51.75 |
| No. 1 cast, Philadelphia | 49.00† | 49.00† | 49.00† | 44.50 |
| No. 1 cast, Chicago | 49.00† | 49.00† | 49.00† | 50.50 |

*Basing Pt. †Shipping Pt.
Not including broker's fee after Feb. 7, 1951.

Coke: Connellsville:

| | | | | |
|-----------------------|---------|---------|---------|---------|
| (per net ton at oven) | | | | |
| Furnace coke, prompt | \$14.75 | \$14.75 | \$14.75 | \$14.25 |
| Foundry coke, prompt | 17.75 | 17.75 | 17.75 | 18.25 |

Nonferrous Metals:

| | | | | |
|-----------------------------------|---------|--------|--------|---------|
| (cents per pound to large buyers) | | | | |
| Copper, electro, Conn. | 24.50 | 24.50 | 24.50 | 23.80 |
| Copper, Lake, Conn. | 24.625 | 24.625 | 24.625 | 24.625 |
| Tin, Straits, New York | \$1.03† | \$1.03 | \$1.03 | \$1.01* |
| Zinc, East St. Louis | 17.50 | 17.50 | 17.50 | 17.50* |
| Lead, St. Louis | 16.80 | 16.80 | 16.80 | 15.80* |
| Aluminum, virgin | 19.00 | 19.00 | 19.00 | 17.50 |
| Nickel, electrolytic | 59.58 | 59.58 | 59.58 | 51.22 |
| Magnesium, ingot | 24.50 | 24.50 | 24.50 | 22.50 |
| Antimony, Laredo, Tex. | 42.00 | 42.00 | 42.00 | 32.00 |

†Tentative. *Revised.

Starting with the issue of May 12, 1940, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 130 of May 12, 1940, issue.)

Composite Prices

Finished Steel Base Price

| | |
|----------------|----------------|
| Sept. 18, 1951 | 4.131¢ per lb. |
| One week ago | 4.131¢ per lb. |
| One month ago | 4.131¢ per lb. |
| One year ago | 3.837¢ per lb. |

| | High | Low |
|----------|------------------|------------------|
| 1951.... | 4.131¢ Jan. 2 | 4.131¢ Jan. 2 |
| 1950.... | 4.131¢ Dec. 1 | 3.837¢ Jan. 3 |
| 1949.... | 3.837¢ Dec. 27 | 3.3705¢ May 3 |
| 1948.... | 3.721¢ July 27 | 3.193¢ Jan. 1 |
| 1947.... | 3.193¢ July 29 | 2.848¢ Jan. 1 |
| 1946.... | 2.848¢ Dec. 31 | 2.464¢ Jan. 1 |
| 1945.... | 2.464¢ May 29 | 2.396¢ Jan. 1 |
| 1944.... | 2.396¢ | 2.396¢ |
| 1943.... | 2.396¢ | 2.396¢ |
| 1942.... | 2.396¢ | 2.396¢ |
| 1941.... | 2.396¢ | 2.396¢ |
| 1940.... | 2.30467¢ Jan. 2 | 2.24107¢ Apr. 16 |
| 1939.... | 2.35367¢ Jan. 3 | 2.26689¢ May 16 |
| 1938.... | 2.58414¢ Jan. 4 | 2.27207¢ Oct. 18 |
| 1937.... | 2.58414¢ Mar. 9 | 2.32263¢ Jan. 4 |
| 1936.... | 2.32263¢ Dec. 28 | 2.05200¢ Mar. 10 |
| 1932.... | 1.89196¢ July 5 | 1.83910¢ Mar. 1 |
| 1929.... | 2.31773¢ May 28 | 2.26498¢ Oct. 29 |

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Pig Iron

| | |
|-------|---------------------------|
| ..... | \$52.69 per gross ton.... |
| ..... | 52.69 per gross ton.... |
| ..... | 52.69 per gross ton.... |
| ..... | 46.61 per gross ton.... |

| | High | Low |
|----------|-----------------|----------------|
| 1951.... | \$52.69 Jan. 2 | \$52.69 Jan. 2 |
| 1950.... | 52.69 Dec. 12 | 45.88 Jan. 3 |
| 1949.... | 46.87 Jan. 18 | 45.88 Sept. 6 |
| 1948.... | 46.91 Oct. 12 | 39.58 Jan. 6 |
| 1947.... | 37.98 Dec. 30 | 30.14 Jan. 7 |
| 1946.... | 30.14 Dec. 10 | 25.37 Jan. 1 |
| 1945.... | 25.37 Oct. 23 | 23.61 Jan. 2 |
| 1944.... | \$23.61 | \$23.61 |
| 1943.... | 23.61 | 23.61 |
| 1942.... | 23.61 | 23.61 |
| 1941.... | \$23.61 Mar. 20 | \$23.45 Jan. 2 |
| 1940.... | 23.45 Dec. 23 | 22.61 Jan. 2 |
| 1939.... | 22.61 Sept. 19 | 20.61 Sept. 12 |
| 1938.... | 23.25 June 21 | 19.61 July 6 |
| 1937.... | 32.25 Mar. 9 | 20.25 Feb. 16 |
| 1936.... | 19.74 Nov. 24 | 18.73 Aug. 11 |
| 1932.... | 14.81 Jan. 5 | 13.56 Dec. 6 |
| 1929.... | 18.71 May 14 | 18.21 Dec. 17 |

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Scrap Steel

| | |
|-------|---------------------------|
| ..... | \$43.00 per gross ton.... |
| ..... | 43.00 per gross ton.... |
| ..... | 43.00 per gross ton.... |
| ..... | 40.75 per gross ton.... |

| | High | Low |
|----------|-----------------|-----------------|
| 1951.... | \$47.75 Jan. 30 | \$43.00 Feb. 7 |
| 1950.... | 45.13 Dec. 19 | 26.25 Jan. 3 |
| 1949.... | 43.00 Jan. 4 | 19.33 June 28 |
| 1948.... | 43.16 July 27 | 39.75 Mar. 9 |
| 1947.... | 42.58 Oct. 23 | 29.50 May 20 |
| 1946.... | 31.17 Dec. 24 | 19.17 Jan. 1 |
| 1945.... | 19.17 Jan. 2 | 18.92 May 22 |
| 1944.... | 19.17 Jan. 11 | 15.76 Oct. 24 |
| 1943.... | \$19.17 | \$19.17 |
| 1942.... | 19.17 | 19.17 |
| 1941.... | \$22.00 Jan. 7 | \$19.17 Apr. 10 |
| 1940.... | 21.83 Dec. 30 | 16.04 Apr. 9 |
| 1939.... | 22.50 Oct. 3 | 14.08 May 16 |
| 1938.... | 15.00 Nov. 22 | 11.00 June 7 |
| 1937.... | 21.92 Mar. 30 | 12.67 June 9 |
| 1936.... | 17.75 Dec. 21 | 12.67 June 8 |
| 1932.... | 8.50 Jan. 12 | 6.43 July 5 |
| 1929.... | 17.58 Jan. 29 | 14.08 Dec. 8 |

Average of No. 1 heavy melting steel scrap delivered to consumer at Pittsburgh, Philadelphia and Chicago.

d in Heavy
21, Sept. 1
1 1950
77 \$51.76
50 46.50
58 49.08
58 42.38
50 46.50
92 50.92
90 46.00
90 46.50
90 46.50
96 68.56
5 173.40
in the Ch
e.

0* \$43.75
0* 38.50
0* 40.00
5* 37.50
0* 46.25
0† 51.75
0† 44.50
0† 50.50

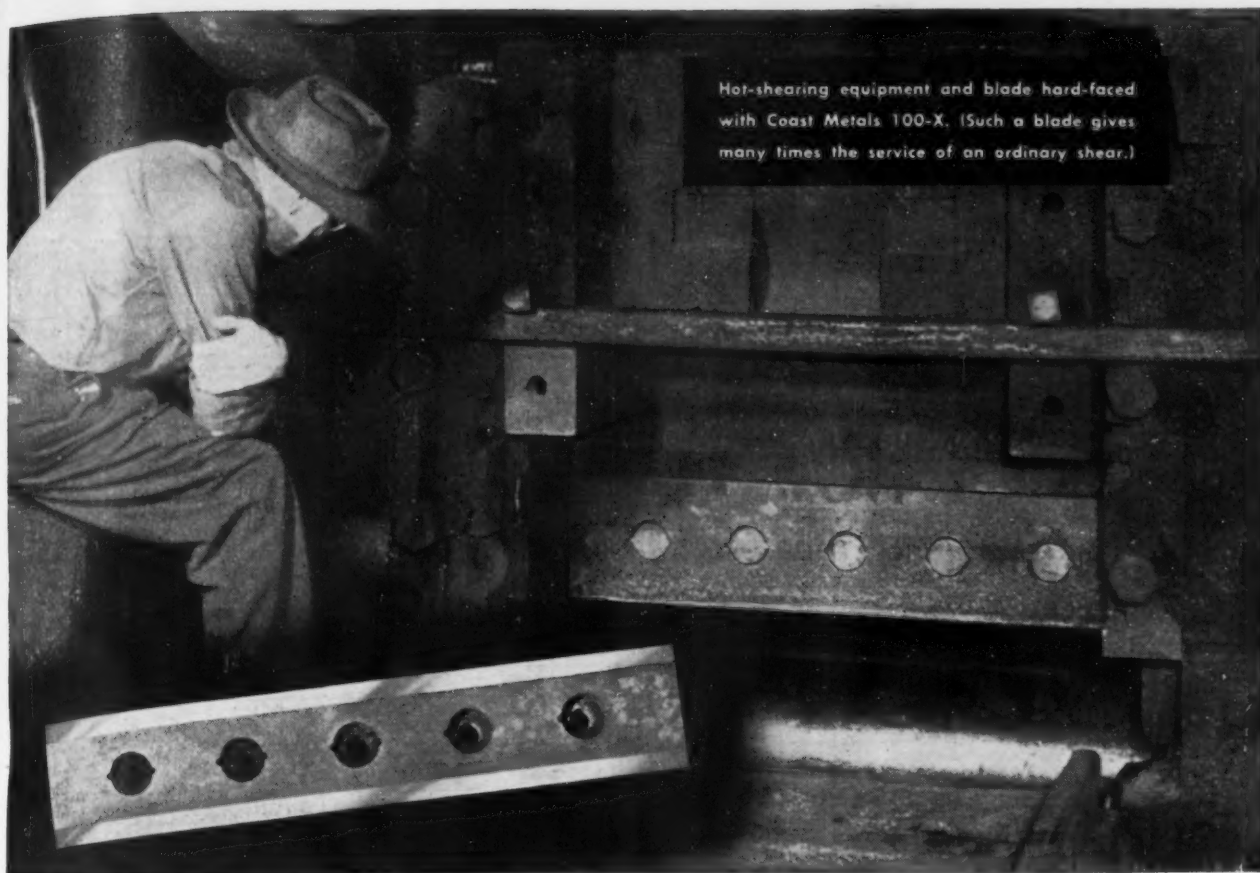
\$14.25
5 16.25

23.80
5 24.625
\$1.01*
17.50*
15.80*
17.50
51.22
22.50
32.00

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July 5
Dec. 8
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Hot-shearing equipment and blade hard-faced
with Coast Metals 100-X. (Such a blade gives
many times the service of an ordinary shear.)

Hot-Shear Blades have a LIFE EXPECTANCY OF 300,000 TONS on Carbon Steel Slabs

Hard-facing with Coast Metals 100-X increases blade life 12 to 1

A typical performance record is being "chalked up" in a large Mid-west steel plant by hot-shear blades hard-faced with Coast Metals No. 100-X alloy.

Here are the details:

APPLICATION

Hot-shearing of carbon steel slabs—42" wide by 3", 4" and 5" thick—with set of 2 blades (top and bottom). No cooling employed.

BLADES

45½" x 9" x 3½". Base metal: S.A.E. 1040 carbon steel. Four edges of each blade hard-faced with Coast Metals 100-X rod.

PERFORMANCE

Top Blade—Continuous operation from May 4 to June 5, 1951 (32 days). Tonnage (one edge): 84,695 tons. Blade turned to second edge June 5.

Bottom Blade—Continuous operation from May 9 to June 5, 1951 (25 days). Tonnage (one edge): 67,877 tons. First edge still in use.

Experience has shown that all four edges of each blade will perform equally well. Thus a total life of approximately 300,000 tons per blade can be expected.

Die steel blades without hard-facing, previously used for identical work in the same plant, had a total tonnage life per blade of only 25,000 tons. Hard-facing with Coast Metals alloy 100-X, therefore, has increased

the life expectancy of such blades 12 to 1.

This is but one example of the way in which Coast Metals alloys are helping producers to increase the life of equipment and reduce downtime. In virtually every industrial field, parts which are subject to impact, abrasion and high heat during operation can be protected from wear—and made to give *much longer service*—by hard-surfacing with C. M. specialized weld rods.

You can find no sounder way to economize than to realize the remarkable savings inherent in Coast Metals hard-facing. Why not let us know your requirements? We'll gladly make recommendations based on your particular needs.



COAST METALS, Inc.

Little Ferry, N. J.

PRODUCERS OF SPECIAL HARD-FACING ALLOYS FOR THE STEEL INDUSTRY

IRON AGE

**STEEL
PRICES**

Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page.
Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.

| | Pittsburgh | Chicago | Gary | Cleveland | Canton Massillon | Middle- town | Youngs- town | Bethle- hem | Buffalo | Conshe- hocken | Johns- town | Spar- rows Point | Granite City | Detroit |
|--|---|--|---|--|-----------------------|-------------------|---|---|------------------------|------------------------|----------------------|------------------------|---------------------|---|
| INGOTS | | | | | | | | | | | | | | |
| Carbon forging, net ton | \$52.00 ¹ | | | | | | | | | | | | | |
| Alloy, net ton | \$54.00 ^{1.17} | | | | | | | | | | | | | \$54.00 ¹ |
| BILLETS, BLOOMS, SLABS | | | | | | | | | | | | | | |
| Carbon, re-rolling, net ton | \$56.00 ^{1.5} | \$56.00 ¹ | \$56.00 ¹ | | | | | | \$56.00 ³ | | \$56.00 ³ | | | |
| Carbon forging billets, net ton | \$66.00 ^{1.5} | \$66.00 ^{1.4} | \$66.00 ¹ | \$66.00 ⁴ | \$66.00 ⁴ | | | | \$66.00 ^{3.4} | \$73.00 ^{3.8} | \$66.00 ³ | | | \$69.00 ¹ |
| Alloy, net ton | \$70.00 ^{1.17.6} | \$70.00 ^{1.4} | \$70.00 ^{1.6} | | \$70.00 ⁴ | | | \$70.00 ³ | \$70.00 ^{3.4} | \$77.00 ^{3.8} | \$70.00 ³ | | | \$73.00 ¹ |
| PIPE SKELP | 3.35 ¹ 3.45 ¹ | | | | | | 3.35 ^{1.4} | | | | | | | |
| WIRE RODS | 4.10 ² 4.30 ^{1.8} | 4.10 ^{2.4.3.3} | 4.10 ² | 4.10 ² | | | 4.10 ² | | 4.10 ^{2.8} | | 4.10 ² | 4.20 ² | | |
| SHEETS | | | | | | | | | | | | | | |
| Hot-rolled (18 ga. & hvr.) | 3.60 ^{1.5.9.15} 3.75 ^{2.8} | 3.60 ^{2.2.3} | 3.60 ^{1.4.9} | 3.60 ^{1.5} | | 3.60 ⁷ | 3.60 ^{1.4.6} 4.00 ^{1.3} | | 3.60 ³ | 4.00 ^{3.8} | | 3.60 ³ | 4.30 ^{2.8} | 3.60 ^{1.3} 4.40 ^{1.7} |
| Cold-rolled | 4.35 ^{1.5.9.15.7} | | 4.35 ^{1.6.8} | 4.35 ^{1.5} | | 4.35 ⁷ | 4.35 ^{1.6} | | 4.35 ³ | | 4.35 ³ | 5.05 ^{2.8} | | 4.50 ^{1.3} |
| Galvanized (10 gage) | 4.80 ^{1.9.15} | | 4.80 ^{1.8} | | 4.80 ⁴ | 4.80 ⁷ | 5.50 ^{4.4} 6.00 ^{4.4} | | | | | 4.80 ³ | 5.50 ^{2.8} | |
| Enameling (12 gage) | 4.65 ¹ | | 4.65 ^{1.8} | 4.65 ⁴ | | 4.65 ⁷ | 4.65 ⁵ | | | | | | 5.35 ^{2.8} | |
| Long term (10 gage) | 5.20 ^{1.5} | | 5.20 ¹ | | | 5.20 ⁷ | 6.00 ^{4.4} | | | | | | | |
| Hi str. low alloy, h.r. | 5.40 ^{1.5} 5.75 ^{2.8} | 5.40 ¹ | 5.40 ^{1.8} 5.90 ^{2.8} | 5.40 ^{1.5} | | | 5.40 ^{1.4.1.3} 5.90 ^{2.8} | | 5.40 ³ | 5.85 ^{2.8} | | 5.40 ³ | | 5.95 ^{1.3} |
| Hi str. low alloy, c.r. | 6.55 ^{1.5} 6.90 ^{2.8} | | 6.55 ^{1.8} 7.05 ^{2.8} | 6.55 ^{1.5} | | | 6.55 ⁴ 7.05 ^{2.8} | | 6.55 ³ | | | 6.55 ³ | | 7.10 ^{1.3} |
| Hi str. low alloy, galv. | 7.20 ¹ | | | | | | | | | | | 6.75 ³ | | |
| STRIP | | | | | | | | | | | | | | |
| Hot-rolled | 3.60 ^{1.4.00^{4.1}} 3.75 ^{2.8} 3.50 ^{5.7} | 3.50 ^{2.8} | 3.50 ^{1.6.8} | | | 3.50 ⁷ | 3.50 ^{1.4.6} 4.00 ^{1.3} | | 3.50 ^{3.4} | 3.90 ^{3.8} | 3.50 ³ | 3.50 ³ | | 4.40 ^{1.7} 3.80 ^{1.3} |
| Cold-rolled | 4.85 ^{2.7.9} 5.00 ^{2.8} 5.35 ^{4.9.5.3.3.3} | 4.90 ^{2.8.8} | 4.90 ² | 4.65 ^{2.5} | | 4.65 ⁷ | 4.65 ^{4.6} 5.25 ^{4.9.4.9} 5.35 ^{1.3.4.8} | | 4.65 ³ | | | 4.65 ³ | | 4.85 ^{1.3} 5.45 ^{1.7} 5.80 ^{2.8.8.1} |
| Hi str. low alloy, h.r. | 5.75 ^{2.8} | | 5.50 ¹ 5.30 ^{2.8} 5.80 ^{2.8} | | | | 4.95 ⁴ 5.50 ¹ 5.40 ^{1.3} 5.80 ^{2.8} 6.20 ⁴ 6.55 ^{1.3} 7.05 ^{2.8} | | 4.95 ³ | 5.55 ^{2.8} | | 4.95 ³ | | 5.95 ^{1.3} |
| Hi str. low alloy, c.r. | 7.20 ^{2.8} | | | 6.55 ² 6.70 ^{2.8} | | | | | 6.40 ³ | | | 6.40 ³ | | |
| TINPLATE | | | | | | | | | | | | | | |
| Cokes, 1.25-lb base box (1.50 lb, add 25¢) | \$8.45 ^{1.5.9.15} | | \$8.45 ^{1.6.8} | | | | \$8.45 ⁴ | | | | | \$8.55 ³ | | |
| Electrolytic 0.25, 0.50, 0.75 lb box | 0.25 lb base box, \$7.15 ^{1.4.5.6.9} ; \$7.25 ^{3.11} ; \$7.35 ^{2.3} 0.50 lb, add 25¢; 0.75 lb add 65¢ | | | | | | | | | | | | | |
| BLACKPLATE, 29 gage | 5.85 ¹ 6.15 ^{1.5} | | 5.85 ¹ | | | | 5.30 ⁴ | | | | | | | |
| Hollowware enameling | | | | | | | | | | | | | | |
| BAR | | | | | | | | | | | | | | |
| Carbon steel | 3.70 ^{1.5} 3.85 ^{2.8} | 3.70 ^{1.4.3.3} | 3.70 ^{1.4.6.8} | 3.70 ⁴ | 3.70 ⁴ | | 3.70 ^{1.4.6} | | 3.70 ^{3.4} | | 3.70 ³ | | | 3.85 ^{1.3} |
| Reinforcing | 3.70 ^{1.5} | 3.70 ⁴ | 3.70 ^{1.6.8} | 3.70 ⁴ | | | 3.70 ^{1.4.6} | | 3.70 ^{3.4} | | 3.70 ³ | 3.70 ³ | | |
| Cold-finished | 4.55 ^{2.4.5.8.2.6.9.7.1} | 4.55 ^{2.3.7.8} | 4.55 ^{4.7.4.7.3} | 4.55 ² | 4.55 ^{4.8.2} | | 4.55 ^{4.8.7} | | 4.60 ^{7.9} | | | | | 4.70 ^{4.4} |
| Alloy, hot-rolled | 4.30 ^{1.17} | 4.30 ^{1.4.3.3} | 4.30 ^{1.6.8} | | 4.30 ⁴ | | 4.30 ^{1.6} | 4.30 ² | 4.30 ^{3.4} | | 4.30 ³ | | | 4.45 ^{1.3} 4.65 ^{1.7} |
| Alloy, cold-drawn | 5.40 ^{1.7.9.3.6.9.7.1.3} | 5.40 ^{4.3.3.6.9.7.3.4} | 5.40 ^{4.7.3.7.4} | | 5.40 ^{4.3.3} | | 5.40 ^{4.3.3.6.7} | 5.40 ³ | 5.40 ¹ | | | | | 5.55 ^{4.4} |
| Hi str. low alloy, h.r. | 5.55 ^{1.5} | | 5.55 ^{1.8} 6.05 ^{2.8} | 5.55 ^{1.5} | | | 5.55 ¹ 6.05 ^{2.8} | 5.55 ³ | 5.55 ³ | | 5.55 ³ | | | |
| PLATE | | | | | | | | | | | | | | |
| Carbon steel | 3.70 ^{1.5.1.5} 4.00 ^{2.8} | 3.70 ^{1.2.8} | 3.70 ^{1.6.8} | 3.70 ^{1.5} | | | 3.70 ^{1.4.6} 3.95 ^{1.3} | | 3.70 ³ | 4.15 ^{2.8} | 3.70 ³ | 3.70 ³ | 4.40 ^{2.3} | |
| Floor plates | 4.75 ¹ | 4.75 ¹ | 4.75 ² | 4.75 ⁵ | | | | | | 4.75 ^{2.8} | | | | |
| Alloy | 4.75 ¹ | 4.75 ¹ | 4.75 ¹ | | | | 5.20 ^{1.3} | | | 5.05 ^{2.8} | 4.75 ³ | 4.75 ³ | | |
| Hi str. low alloy | 5.65 ^{1.5} | 5.65 ¹ | 5.65 ^{1.8} 6.15 ^{2.8} | 5.65 ^{1.5} | | | 5.65 ⁴ 5.70 ^{1.3} 6.15 ^{2.8} | | | 5.90 ^{2.8} | 5.65 ³ | 5.65 ³ | | |
| SHAPES, Structural | | | | | | | | | | | | | | |
| Hi str. low alloy | 5.50 ^{1.5} | 5.50 ¹ | 5.50 ^{1.8} 6.00 ^{2.8} | | | | 6.00 ^{2.8} | 5.50 ³ | 5.50 ³ | | 5.50 ³ | | | |
| MANUFACTURERS' WIRE | | | | | | | | | | | | | | |
| Bright | 4.85 ^{2.5} 5.10 ^{1.8} | 4.85 ² 4.95 ^{3.4} | | 4.85 ² | | | 4.85 ² | Kokomo = 4.95 ^{2.8} 4.85 ^{2.8} | | | 4.85 ³ | 4.95 ³ | | Duluth = 4.85 ² |
| PILING, Steel Sheet | 4.45 ¹ | 4.45 ¹ | 4.45 ² | | | | | | 4.45 ³ | | | | | |

Smaller numbers indicate producing companies. See key at right.
Prices are in cents per lb unless otherwise noted. Extras apply.

IRON AGE

STEEL PRICES

| Kansas City | Houston | Birmingham | WEST COAST Seattle, San Francisco, Los Angeles, Fontana | |
|--------------------|-----------------------|--|---|---|
| | | | F = \$79.00 ¹⁹ | INGOTS Carbon forging, net ton |
| | \$82.00 ²³ | | F = \$80.00 ¹⁹ | Alloy, net ton |
| | | \$58.00 ¹¹ | F = \$75.00 ¹⁹ | BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton |
| | \$74.00 ²³ | \$86.00 ¹¹ | F = \$85.00 ¹⁹ SF, LS, S = \$85.00 ²³ | Carbon forging billets, net ton |
| | \$78.00 ²³ | | F = \$89.00 ¹⁹ LA = \$90.00 ²³ | Alloy net ton |
| | | | Alton = 4.40 ²³ Worcester = 4.40 ²³ Minnequa = 4.35 ¹⁴ Portsmouth = 4.30 ²⁹ | PIPE SKELP |
| | 4.50 ²³ | 4.10 ¹¹ | SF = 4.90 ²³ , F = 4.90 ¹⁹ LA = 4.90 ²⁴ , 4.2 | WIRE RODS |
| | | 3.80 ¹¹ | SF, LA = 4.30 ²⁴ F = 4.55 ¹⁹ | SHEETS Hot-rolled (18 ga. & hvr.) |
| | | 4.35 ¹¹ | SF = 5.30 ²⁴ F = 5.30 ¹⁹ | Cold-rolled |
| | | 4.80 ¹¹ | SF, LA = 5.55 ²⁴ | Galvanized (10 gage) |
| | | | Ashland = 4.80 ²⁷ Kokomo = 5.20 ²⁹ | Enameling (12 gage) |
| | | | Ashland = 4.85 ²⁷ | Long ternes (10 gage) |
| | | 5.40 ¹¹ | F = 6.35 ¹⁹ | Hi str. low alloy, h.r. |
| | | | F = 7.50 ¹⁹ | Hi str. low alloy, c.r. |
| 4.10 ²³ | 4.90 ²³ | 3.50 ¹¹ | SF, LA = 4.25 ²⁴ , 4.2 F = 4.75 ¹⁹ , S = 4.50 ²³ | Hi str. low alloy, galv. |
| | | | F = 6.30 ¹⁹ LA = 6.40 ²⁷ | STRIP Hot-rolled |
| | | 5.30 ¹¹ | F = 6.20 ¹⁹ SF, LA = 6.05 ²³ S = 6.30 ²³ | Cold-rolled |
| | | | F = 6.95 ¹⁹ | Hi str. low alloy, h.r. |
| | | \$8.55 ¹¹ | SF = 9.20 ²⁴ | Hi str. low alloy, c.r. |
| | | | | TINPLATE Cokes, 1.25-lb base box (1.80 lb, add 25¢) |
| | | | | Electrolytic 0.25, 0.50, 0.75 lb box |
| 4.30 ²³ | 4.10 ²³ | 3.70 ¹¹ | SF, LA = 4.40 ²⁴ | BLACKPLATE, 29 gage Hollowware enameling |
| 4.30 ²³ | 4.10 ²³ | 3.70 ¹¹ | SF, S = 4.45 ²³ F = 4.40 ¹⁹ , LA = 4.40 ²³ | BARS Carbon steel |
| | | | LA = 6.00 ²⁴ | Reinforcing |
| 4.90 ²³ | 4.70 ²³ | | LA = 5.35 ²³ F = 5.35 ¹⁹ | Cold-finished |
| | | | Newark = 5.00 ²⁹ Putnam = 5.10 ²⁹ Hartford = 5.10 ²⁴ | Alloy, hot-rolled |
| | | 5.55 ¹¹ | F = 6.60 ¹⁹ , SF, S = 6.30 ²³ LA = 6.25 ²³ | Alloy, cold-drawn |
| | 4.10 ²³ | 3.70 ¹¹ | F = 4.30 ¹⁹ S = 4.60 ²³ | Hi str. low alloy, h.r. |
| | | | F = 5.70 ¹⁹ | PLATE Carbon steel |
| 4.25 ²³ | 4.05 ²³ | 3.60 ¹¹ 3.85 ¹¹ | SF = 4.20 ²³ , F = 4.25 ¹⁹ LA = 4.25 ²⁴ , 4.2 S = 4.30 ²³ | Floor plate |
| | | 5.50 ¹¹ | SF = 6.10 ²³ , 19 SF = 6.00 ²³ LA = 6.05 ²³ | Alloy |
| 5.40 ²³ | 5.15 ²³ | 4.85 ¹¹ | SF, LA = 5.80 ²⁴ | Hi str. low alloy |
| | | | Geneva = 5.65 ¹⁹ Minnequa = 5.10 ¹⁴ Phoenixville = 6.25 ²⁹ | SHAPES, Structural |
| | | | Geneva = 5.50 ¹⁹ Alton = 5.05 ²³ Worcester = 5.15 ²³ Minnequa = 5.10 ¹⁴ Portsmouth = 5.25 ²⁹ | SI str. low alloy |
| | | | | MANUFACTURERS' WIRE Bright |

¹⁹Special coated mfg ternes deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate, 55 to 128-lb, deduct \$2.20 from 1.25-lb coke base box.

Key to Steel Producers

- U. S. Steel Co., Pittsburgh
- American Steel & Wire Co., Cleveland
- Bethlehem Steel Co., Bethlehem
- Republic Steel Corp., Cleveland
- Jones & Laughlin Steel Corp., Pittsburgh
- Youngstown Sheet & Tube Co., Youngstown
- Armco Steel Corp., Middletown, Ohio
- Inland Steel Co., Chicago
- Weirton Steel Co., Weirton, W. Va.
- National Tube Co., Pittsburgh
- Tennessee Coal, Iron & R. R. Co., Birmingham
- Great Lakes Steel Corp., Detroit
- Sharon Steel Corp., Sharon, Pa.
- Colorado Fuel & Iron Corp., Denver
- Wheeling Steel Corp., Wheeling, W. Va.
- Geneva Steel Co., Salt Lake City
- Crucible Steel Co. of America, New York
- Pittsburgh Steel Co., Pittsburgh
- Kaiser Steel Corp., Oakland, Calif.
- Portsmouth Div., Detroit Steel Corp., Detroit
- Lukens Steel Co., Coatesville, Pa.
- Granite City Steel Co., Granite City, Ill.
- Wisconsin Steel Co., South Chicago, Ill.
- Columbia Steel Co., San Francisco
- Copperweld Steel Co., Glassport, Pa.
- Alan Wood Steel Co., Conshohocken, Pa.
- Calstrip Steel Corp., Los Angeles
- Allegheny Ludlum Steel Corp., Pittsburgh
- Claymont Steel Corp., Claymont, Del.
- Continental Steel Corp., Kokomo, Ind.
- Rotary Electric Steel Co., Detroit
- Laclede Steel Co., Alton, Ill.
- Northwestern Steel & Wire Co., Sterling, Ill.
- Keystone Steel & Wire Co., Peoria, Ill.
- Central Iron & Steel Co., Harrisburg, Pa.
- Carpenter Steel Co., Reading, Pa.
- Eastern Stainless Steel Corp., Baltimore
- Washington Steel Corp., Washington, Pa.
- Jaspot Steel Co., Washington, Pa.
- Blair Strip Steel Co., New Castle, Pa.
- Superior Steel Corp., Carnegie, Pa.
- Timken Steel & Tube Div., Canton, Ohio
- Babcock & Wilcox Tube Co., Beaver Falls, Pa.
- Reeves Steel & Mfg. Co., Dover, Ohio
- John A. Roebling's Sons Co., Trenton, N. J.
- Simonds Saw & Steel Co., Fitchburg, Mass.
- McLouth Steel Corp., Detroit
- Cold Metal Products Co., Youngstown
- Thomas Steel Co., Warren, Ohio
- Wilson Steel & Wire Co., Chicago
- Sweet's Steel Co., Williamsport, Pa.
- Superior Drawn Steel Co., Monaca, Pa.
- Tremont Nail Co., Wareham, Mass.
- Firth Sterling St. & Carbide Corp., McKeesport
- Ingersoll Steel Div., Chicago
- Phoenix Iron & Steel Co., Phoenixville, Pa.
- Fitzsimons Steel Co., Youngstown
- Stanley Works, New Britain, Conn.
- Universal-Cyclops Steel Corp., Bridgeville, Pa.
- American Cladmetals Co., Carnegie, Pa.
- Cuyahoga Steel & Wire Co., Cleveland
- Bethlehem Pacific Coast Steel Corp., San Fran.
- Follansbee Steel Corp., Pittsburgh
- Niles Rolling Mill Co., Niles, Ohio
- Atlantic Steel Co., Atlanta
- Acme Steel Co., Chicago
- Joslyn Mfg. & Supply Co., Chicago
- Detroit Steel Corp., Detroit
- Wycoff Steel Co., Pittsburgh
- Bliss & Laughlin, Inc., Harvey, Ill.
- Columbia Steel & Shifting Co., Pittsburgh
- Cumberland Steel Co., Cumberland, Md.
- La Salle Steel Co., Chicago
- Monarch Steel Co., Inc., Hammond, Ind.
- Empire Steel Co., Mansfield, Ohio
- Mahoning Valley Steel Co., Niles, Ohio
- Oliver Iron & Steel Co., Pittsburgh
- Pittsburgh Screw & Bolt Co., Pittsburgh
- Standard Forging Corp., Chicago
- Driver Harris Co., Harrison, N. J.
- Detroit Tube & Steel Div., Detroit
- Reliance Div., Eaton Mfg. Co., Massillon, Ohio
- Sheffield Steel Corp., Kansas City
- Plymouth Steel Co., Detroit
- Wickwire Spencer Steel, Buffalo
- Angell Nail and Chaplet, Cleveland
- Mid-States Steel & Wire, Crawfordsville, Ind.
- National Supply, Pittsburgh, Pa.
- Wheatland Tube Co., Wheatland, Pa.
- Mercer Tube & Mfg. Co., Sharon, Pa.
- Woodward Iron Co., Woodward, Ala.
- Gloss-Sheffield Steel & Iron Co., Birmingham
- Hanna Furnace Corp., Detroit
- Interlake Iron Corp., Cleveland
- Lone Star Steel Co., Dallas
- Mystic Iron Works, Everett, Mass.
- Jackson Iron & Steel Co., Jackson, O.
- Globe Iron Co., Jackson, O.
- Pittsburgh Coke & Chemical Co., Pittsburgh
- Shenango Furnace Co., Pittsburgh
- Tennessee Products & Chem. Corp., Nashville
- Koppers Co., Inc., Granite City, Ill.
- Page Steel & Wire Div., American Chain & Cable, Monessen, Pa.
- Wallingford Steel Co., Wallingford, Conn.
- Tonawanda Iron Div., N. Tonawanda, N. Y.

Steel Prices

STAINLESS STEELS

Base price, cents per lb, f.o.b. mill

| Product | 301 | 302 | 303 | 304 | 316 | 321 | 347 | 410 | 416 | 430 |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ingot's reolling | 14.25 | 15.25 | 16.75 | 16.25 | 24.75 | 20.00 | 21.75 | 12.75 | 14.75 | 13.00 |
| Slabs billets reolling | 18.50 | 20.00 | 22.00 | 21.00 | 32.25 | 26.25 | 28.50 | 16.50 | 20.00 | 16.75 |
| Forg. discs die blocks rings | 34.00 | 34.25 | 36.75 | 35.75 | 53.00 | 40.25 | 44.75 | 26.00 | 28.50 | 28.50 |
| Billets forging | 26.25 | 26.50 | 28.50 | 27.75 | 41.50 | 31.25 | 35.00 | 21.50 | 22.00 | 22.00 |
| Bars wires structural | 31.25 | 31.50 | 34.00 | 33.00 | 49.25 | 37.00 | 41.50 | 25.75 | 26.25 | 26.25 |
| Plates | 33.00 | 33.25 | 35.25 | 35.25 | 52.00 | 40.75 | 45.25 | 27.00 | 27.50 | 27.50 |
| Sheets | 41.00 | 41.25 | 43.25 | 43.25 | 57.00 | 49.25 | 53.75 | 36.50 | 37.00 | 39.00 |
| Strip hot-rolled | 26.50 | 28.25 | 32.50 | 30.25 | 48.75 | 37.00 | 41.25 | 23.50 | 30.25 | 24.00 |
| Strip cold-rolled | 34.00 | 36.75 | 40.25 | 38.75 | 59.00 | 48.25 | 52.25 | 30.50 | 37.00 | 31.00 |

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 38 (type 316 add 4, 5¢), 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 46.
Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 38 (type 316 add 4, 5¢); W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, Pa., 13 (type 301 add ¼¢); Butler, Pa., 7; Wallingford, Conn., 104.
Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 55; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.
Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28; Monessen, 103; Syracuse, N. Y., 17; Bridgeville, Pa., 59.
Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44; Syracuse, N. Y., 17.
Plates: Brackenridge, Pa., 28 (type 416 add ¼¢); Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.
Forged discs, die blocks, rings: Pittsburgh, 17; Syracuse, 17; Ferndale, Mich., 28; Washington, Pa., 39.
Forging billets: Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1; Syracuse, N. Y., 17.

*ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 Series.

WASHINGTON STEEL—Slightly lower on 300 Series except where noted.

MERCHANT WIRE PRODUCTS

| F.o.b. Mill | Base Col. | Standard & Coated Nails Col. | Woven Wire Fence 9-15½ ga. Col. | Fence Posts Col. | Single Loop Bale Ties Col. | Twisted Barbless Wire Col. | Gal. Barbed Wire Col. | March Wire Ann'l'd ¢/lb. | March Wire (C. I.) ¢/lb. |
|-------------------------|-----------|---------------------------------|------------------------------------|---------------------|-------------------------------|-------------------------------|--------------------------|-----------------------------|-----------------------------|
| Alabama City-4 | 118 | 126 | | | 123 | | 136 | 5.70 | 5.95 |
| Aliquippa, Pa.-5 | 118 | 132 | | | | 136 | 140 | 5.70 | 6.15 |
| Atlanta-65 | 121 | 133 | | 126 | 126 | | 143 | 5.95 | 6.40 |
| Bartonville-34 | 118 | 130 | | 123 | 143 | | 143 | 5.70 | 6.15 |
| Buffalo-85 | | | | | | | | 4.85 | |
| Cleveland-86 | 125 | | | | | | | | |
| Cleveland-2 | | | | | | | | 5.70 | 6.15 |
| Crawfordville-87 | | 132 | | | | | 145 | 5.95 | 6.40 |
| Donora, Pa.-2 | 118 | 130 | | 123 | 140 | | 140 | 5.70 | 6.15 |
| Duluth-2 | 118 | 130 | | 123 | 140 | | 140 | 5.70 | 6.15 |
| Fairfield, Ala.-11 | 118 | 130 | | 123 | | | 140 | 5.70 | 6.15 |
| Houston-83 | 126 | 138 | | | | | 148 | 6.10 | 6.55 |
| Johnstown, Pa.-3 | 118 | 130 | | | 140 | | 140 | 5.70 | 6.15 |
| Joliet, Ill.-2 | 118 | 130 | | 123 | | | 140 | 5.70 | 6.15 |
| Kokomo, Ind.-30 | 120 | 132 | | 126 | 138 | | 142 | 6.85 | 6.95 |
| Los Angeles-62 | | | | | | | | 15.2 | 6.30 |
| Kansas City-83 | 130 | | | 135 | | | 146 | 5.95 | 6.45 |
| Minnequa-14 | 123 | 138 | 130 | 128 | 146 | | 145 | 5.95 | 6.45 |
| Mnessen-18 | 124 | 135 | | | | | | | |
| Moline, Ill.-4 | | | | 136 | | | | | |
| Pittsburg, Cal.-24 | 137 | | | | 147 | 156 | 160 | 6.65 | 6.80 |
| Portsmouth-20 | 124 | 137 | | | | 147 | 147 | 6.10 | 6.60 |
| Rankin, Pa.-2 | 118 | 130 | | | | 140 | 140 | 5.70 | 6.15 |
| S.Chicago,Ill.-4 | 118 | 126 | 140 | 123 | | | 136 | 5.70 | 5.95 |
| S. San Fran.-14 | | | | | 147 | | 160 | 6.65 | 7.00 |
| Sparrows Pt.-3 | 120 | | | 125 | 142 | 142 | 142 | 6.80 | 6.25 |
| Sterling, Ill.-33 | 118 | 130 | | 123 | 140 | 140 | 140 | 5.70 | 6.15 |
| Struthers, Ohio-6 | | | | | | | | 5.70 | 6.15 |
| Torrance, Cal.-24 | 138 | | | | | | | 6.65 | |
| Worcester-2 | 124 | | | | | | | 6.00 | 6.45 |
| Williamsport, Pa.-51 | | | | 150 | | | | | |

Cut Nails, carloads, base, \$7.35 per 100 lb (less 20¢ to jobbers), at Conshohocken, Pa., (26), Wheeling, W. Va., (15), \$7.15.

(1) **Alabama City and So. Chicago** do not include zinc extra.

CAST IRON WATER PIPE

| | <i>Per Net Ton</i> |
|---|----------------------|
| 6 to 24-in., del'd Chicago. | \$105.30 to \$108.80 |
| 6 to 24-in., del'd N. Y. . . . | 108.50 to 109.50 |
| 6 to 24-in., Birmingham. | 91.50 to 96.00 |
| 6-in and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less | \$123.00 to \$130.00 |
| Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in. | |

PIPE AND TUBING

Base discounts, f.o.b. mills. Base price about \$200 per net ton.

| | BUTTWELD | | | | | | | | | | | | | | | SEAMLESS | | | | | | | | |
|----------------------|----------|------|---------|------|-------|------|-----------|------|-----------|------|-------|------|-------------|------|-------|----------|-------------|------|-------------|------|--|--|--|--|
| | 1/2 In. | | 3/4 In. | | 1 In. | | 1 1/4 In. | | 1 1/2 In. | | 2 In. | | 2 1/2-3 In. | | 2 In. | | 2 1/2-3 In. | | 3 1/2-4 In. | | | | | |
| | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | Blk. | Gal. | | | | |
| STANDARD | | | | | | | | | | | | | | | | | | | | | | | | |
| T. & C. | | | | | | | | | | | | | | | | | | | | | | | | |
| Sparrows Pt.-3 | 34.0 | 12.0 | 37.0 | 16.0 | 39.5 | 19.5 | 40.0 | 20.0 | 40.5 | 21.0 | 41.0 | 21.5 | 41.5 | 22.0 | | | | | | | | | | |
| Cleveland-4 | 36.0 | 14.0 | 39.0 | 18.0 | 41.5 | 21.5 | 42.0 | 22.0 | 42.5 | 23.0 | 43.0 | 23.5 | 43.5 | 24.0 | | | | | | | | | | |
| Oakland-19 | 25.0 | 3.0 | 28.0 | 7.0 | 30.5 | 10.5 | 31.0 | 11.0 | 31.5 | 11.2 | 32.0 | 12.5 | 32.5 | 13.0 | | | | | | | | | | |
| Pittsburgh-5 | 36.0 | 14.0 | 39.0 | 17.0 | 41.5 | 19.5 | 42.0 | 20.5 | 42.5 | 21.0 | 43.0 | 21.5 | 43.5 | 22.5 | 29.5 | 8.0 | 32.5 | 11.5 | 34.5 | 13.5 | | | | |
| Pittsburgh-10 | 36.0 | 14.0 | 39.0 | 18.0 | 41.5 | 21.5 | 42.0 | 22.0 | 42.5 | 23.0 | 43.0 | 23.5 | 43.5 | 24.0 | 29.5 | 9.5 | 32.5 | 12.5 | 34.5 | 14.5 | | | | |
| Alton, Ill.-32 | 35.0 | 13.0 | 38.0 | 17.0 | 40.0 | 20.0 | 41.0 | 21.0 | 41.5 | 22.0 | 42.0 | 22.5 | 42.5 | 23.0 | | | | | | | | | | |
| Sharon-90 | 36.0 | 13.0 | 39.0 | 17.0 | 41.5 | 20.0 | 42.0 | 20.5 | 42.5 | 21.0 | 43.0 | 21.5 | 43.5 | 22.0 | | | | | | | | | | |
| Pittsburgh-88 | 36.0 | 14.0 | 39.0 | 18.0 | 41.5 | 21.5 | 42.0 | 22.0 | 42.5 | 23.0 | 43.0 | 23.5 | 43.5 | 24.0 | 29.5 | | 32.5 | | 34.5 | | | | | |
| Wheeling-15 | 36.0 | 14.0 | 39.0 | 18.0 | 41.5 | 21.5 | 42.0 | 22.0 | 42.5 | 23.0 | 43.0 | 23.5 | 43.5 | 24.0 | | | | | | | | | | |
| Wheatland-89 | 36.0 | 14.0 | 39.0 | 17.0 | 41.5 | 19.5 | 42.0 | 20.5 | 42.5 | 21.0 | 43.0 | 21.5 | 43.5 | 22.5 | | | | | | | | | | |
| Youngstown-6 | 36.0 | 14.0 | 39.0 | 18.0 | 41.5 | 21.5 | 42.0 | 22.0 | 42.5 | 23.0 | 43.0 | 23.5 | 43.5 | 24.0 | 29.5 | 9.5 | 32.5 | 12.5 | 34.5 | 14.5 | | | | |
| EXTRA STRONG. | | | | | | | | | | | | | | | | | | | | | | | | |
| PLAIN ENDS | | | | | | | | | | | | | | | | | | | | | | | | |
| Sparrows Pt.-3 | 33.5 | 13.0 | 37.5 | 17.0 | 39.5 | 20.5 | 40.0 | 21.0 | 40.5 | 22.0 | 41.0 | 22.5 | 41.5 | 23.0 | | | | | | | | | | |
| Cleveland-4 | 35.5 | 15.0 | 39.5 | 19.0 | 41.5 | 22.5 | 42.0 | 23.0 | 42.5 | 24.0 | 43.0 | 24.5 | 43.5 | 25.0 | | | | | | | | | | |
| Oakland-19 | 24.5 | 4.0 | 28.5 | 8.0 | 30.5 | 11.5 | 31.0 | 12.0 | 31.5 | 13.0 | 32.0 | 13.5 | 32.5 | 14.0 | | | | | | | | | | |
| Pittsburgh-5 | 35.5 | 13.5 | 39.5 | 17.5 | 41.5 | 19.5 | 42.0 | 20.5 | 42.5 | 21.0 | 43.0 | 21.5 | 43.5 | 22.5 | 29.0 | 7.5 | 33.0 | 12.0 | 36.5 | 15.5 | | | | |
| Pittsburgh-10 | 35.5 | 15.0 | 39.5 | 19.0 | 41.5 | 22.5 | 42.0 | 23.0 | 42.5 | 24.0 | 43.0 | 24.5 | 43.5 | 25.0 | 29.0 | 10.0 | 33.0 | 14.0 | 36.5 | 17.5 | | | | |
| Alton, Ill.-32 | 32.5 | 12.0 | 36.5 | 16.0 | 38.5 | 19.5 | 39.0 | 20.0 | 39.5 | 21.0 | 40.0 | 21.5 | 40.5 | 22.0 | | | | | | | | | | |
| Sharon-90 | 35.5 | 14.0 | 39.5 | 18.0 | 41.5 | 21.0 | 42.0 | 21.5 | 42.5 | 22.0 | 43.0 | 22.5 | 43.5 | 23.0 | | | | | | | | | | |
| Pittsburgh-88 | 35.5 | 15.0 | 39.5 | 19.0 | 41.5 | 22.5 | 42.0 | 23.0 | 42.5 | 24.0 | 43.0 | 24.5 | 43.5 | 25.0 | 29.0 | | 33.0 | | 36.5 | | | | | |
| Wheeling-15 | 35.5 | 15.0 | 39.5 | 19.0 | 41.5 | 22.5 | 42.0 | 23.0 | 42.5 | 24.0 | 43.0 | 24.5 | 43.5 | 25.0 | | | | | | | | | | |
| Wheatland-89 | 35.5 | 13.5 | 39.5 | 17.5 | 41.5 | 19.5 | 42.0 | 20.5 | 42.5 | 21.0 | 43.0 | 21.5 | 43.5 | 22.5 | | | | | | | | | | |
| Youngstown-6 | 35.5 | 15.0 | 39.5 | 19.0 | 41.5 | 22.5 | 42.0 | 23.0 | 42.5 | 24.0 | 43.0 | 24.5 | 43.5 | 26.0 | 29.0 | 10.0 | 33.0 | 14.0 | 36.5 | 17.5 | | | | |

Galvanized discounts based on zinc at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: 1/2 in., 3/4 in., and 1 in., 1 pt.; 1 1/4 in., 1 1/2 in., 2 in., 3/4 pt.; 2 1/2 in., 3 in., 1/2 pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.5¢ to 17.5¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢ or more. Threads only, butt weld and seamless, 1 pt. higher discount. Plain ends, butt weld and seamless, 3 in. and under, 2 1/2 pts. higher discount. Butt weld jobbers' discount, 5 cts.

RAILS, TRACK SUPPLIES

| F.o.b. Mill Cents Per Lb | No. 1 Std. Railla | Light Railla | Joint Railla | Track Spikes | Aties | Screw Spikes | Tie Plates | Track Bolts |
|-----------------------------|----------------------|--------------|--------------|--------------|-------|--------------|------------|-------------|
| Bessemer-1 | 3.60 | 4.00 | 4.70 | | | | | |
| Chicago-4 | | | | 6.15 | | | | |
| Ensley-11 | 3.60 | 4.00 | | | | | | |
| Fairfield-11 | | 4.00 | 4.40 | | | 8.60 | 4.50 | |
| Gary-1 | 3.60 | 4.00 | | | | | 4.50 | |
| Ind. Harbor-8 | 3.60 | | 4.70 | 6.15 | 5.60 | 8.60 | 4.50 | |
| Johnstown-3 | | 4.00 | | | 5.60 | 8.60 | | |
| Joilet-1 | | 4.00 | 4.70 | | | | | |
| Kansas City-83. | | | | 6.40 | | | | 9.35 |
| Lackawanna-3. | 3.60 | 4.00 | 4.70 | | | 8.60 | 4.50 | |
| Lebanon-3 | | | | 6.15 | | | | 9.35 |
| Minnequa-14 | 3.60 | 4.50 | 4.70 | 6.15 | | 8.60 | 4.50 | 9.35 |
| Pittsburgh-77 | | | | | | 9.35 | | 9.35 |
| Pittsburgh-78 | | | | 6.15 | | | | 9.35 |
| Pittsburgh-5 | | | | | | | | 4.65 |
| Pittsburgh-24 | | | | 6.65 | | | | 4.65 |
| Seattle-62 | | | | | | | | 4.50 |
| Steelon-3 | 3.60 | | 4.70 | | | | | |
| Struthers-6 | | | | 6.15 | | | | |
| Torrance-24 | | | | | | | | 4.65 |
| Youngstown-4. | | | | 6.15 | | | | |

BOILER TUBES \$ Per 100 ft., cut, 10 to 24 ft.

| F.o.b. Mill | Size | | Seamless | | Elec. Weld | |
|----------------------|--------|----------|----------|-------|------------|-------|
| | OD-In. | B.W. Ga. | H.R. | C.D. | H.R. | C.D. |
| Babcock & Wilcox... | 2 | 13 | 22.67 | 26.66 | 21.99 | 25.66 |
| | 2½ | 12 | 30.48 | 35.84 | 29.57 | 34.70 |
| | 3 | 12 | 33.90 | 39.90 | 32.89 | 38.70 |
| | 3½ | 11 | 42.37 | 49.89 | 41.10 | 48.33 |
| National Tube..... | 4 | 10 | 52.60 | 61.88 | 51.03 | 60.00 |
| | 2 | 13 | 21.62 | 26.48 | ..... | ..... |
| | 2½ | 12 | 29.65 | 36.32 | ..... | ..... |
| | 3 | 12 | 34.00 | 41.64 | ..... | ..... |
| Pittsburgh Steel.... | 3½ | 11 | 40.34 | 49.41 | ..... | ..... |
| | 4 | 10 | 51.21 | 62.72 | ..... | ..... |
| | 2 | 13 | ..... | 27.08 | ..... | ..... |
| | 2½ | 12 | 30.49 | 37.15 | ..... | ..... |
| | 3 | 12 | 34.95 | 42.59 | ..... | ..... |
| | 3½ | 11 | 41.48 | 50.54 | ..... | ..... |
| | 4 | 10 | 52.65 | 64.16 | ..... | ..... |

FLUORSPAR

| | |
|---|---------|
| Washed gravel, f.o.b. Rosiclare, Ill. | |
| Price, net ton; Effective CaF_2 content: | |
| 70% or more..... | \$43.00 |
| 60% or less..... | 40.00 |

Miscellaneous Prices

Base price, f.o.b., dollars per 100 lb. * (Metropolitan area delivery add 20¢ except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul, add 15¢; Memphis, add 10¢; Philadelphia, add 25¢; New York, add 30¢).

WAREHOUSES

| Cities | Sheets | | | Strip | | Plates | | Shapes | | Bars | | Alloy Bars | | | |
|---------------------|------------|-----------------------|----------------------|------------|-------------------|-------------------|-------------------|-------------------|---------------|-----------------------------|----------------------------|-----------------------------|----------------------------|--|--|
| | Hot-Rolled | Cold-Rolled (19 gage) | Galvanized (10 gage) | Hot-Rolled | Cold-Rolled | Standard | Structural | Hot-Rolled | Cold-Finished | Hot-Rolled A 4615 As rolled | Hot-Rolled A 4140 Annealed | Cold-Drawn A 4615 As rolled | Cold-Drawn A 4140 Annealed | | |
| Baltimore | 5.60 | 6.84 | 7.49 ² | 6.04 | | 5.80 | 6.14 | 6.04 | 6.84-6.89 | 10.24 | 10.54 | 11.89 | 12.19 | | |
| Birmingham* | 5.60 | 6.40 | 6.75 | 5.55 | | 5.95 | 5.70 | 5.55 | | | | | | | |
| Boston | 6.20 | 7.00 | 7.74 | 6.15 | 8.50 ⁴ | 6.48 | 6.20 | 6.05 | 6.79 | 10.25 | 10.55 | 11.90 | 12.20 | | |
| Buffalo | 5.60 | 6.40 | 7.74 | 5.86 | | 6.05 | 5.80 | 5.60 | 6.84 | 10.15 | 10.45 | 11.80 | 12.10 | | |
| Chicago | 5.60 | 6.40 | 7.75 | 5.55 | | 5.80 | 5.70 | 5.55 | 6.30 | 9.80 | 10.10 | 11.45 | 11.75 | | |
| Cincinnati* | 5.67 | 6.44 | 7.39 | 5.80 | | 6.19 | 6.09 | 5.80 | 6.61 | 10.15 | 10.45 | 11.80 | 12.10 | | |
| Cleveland | 5.60 | 6.40 | 8.10 | 5.89 | 6.90 | 5.92 | 5.82 | 5.57 | 6.40 | 9.91 | 10.21 | 11.56 | 11.86 | | |
| Detroit | 5.78 | 6.53 | 7.89 | 5.94 | | 5.99 | 6.09 | 5.84 | 6.56 | 10.11 | 10.41 | 11.76 | 12.06 | | |
| Houston | 7.00 | 8.25 | | | | 6.85 | 6.50 | 6.65 | 9.35 | 10.35 | 11.25 | | 12.75 | | |
| Indianapolis, del'd | 6.00 | 6.80 | 8.15 | 5.95 | | 6.20 | 6.10 | 5.95 | 6.80 | | | | | | |
| Kansas City | 6.00 | 6.80 | 7.45 | 6.15 | 7.50 | 6.40 | 6.30 | 6.15 | 7.00 | 10.40 | 10.70 | 12.05 | 12.35 | | |
| Los Angeles | 6.35 | 7.90 | 8.85 | 6.40 | 9.45 ⁶ | 6.40 | 6.35 | 6.35 | 8.20 | 11.30 | 11.30 | 13.20 | 13.50 | | |
| Memphis* | 6.33 | 7.08 | | 6.33 | | 6.43 | 6.33 | 6.08 | 7.18 | | | | | | |
| Milwaukee | 6.38 | 7.10 | | 6.38 | | 6.02 | 6.48 | 6.33 | 7.32 | | | | | | |
| New Orleans* | 5.74 | 6.54 | 7.89 | 5.69 | | 5.94 | 5.84 | 5.69 | 6.44 | 9.94 | 10.24 | 11.59 | 11.89 | | |
| New York* | 5.70 | 6.59 | | 5.75 | 7.25 | 5.95 | 5.75 | 5.75 | 7.30 | | | | | | |
| Portland | 5.67 | 7.19 ² | 8.14 ³ | 6.29 | 8.63 ⁴ | 6.28 | 6.10 | 6.12 | 6.99 | 10.05 | 10.35 | 11.70 | 12.10 | | |
| Philadelphia* | 5.97 | 7.24 ¹ | | 6.09 | | 6.58 | | | | 10.15 | 10.45 | 11.80 | 12.20 | | |
| Pittsburgh | 5.50 | 6.80 | 8.00 | 6.10 | | 6.50 ³ | 6.60 ³ | 6.53 ³ | | | | | | | |
| Portland | 5.60 | 6.40 | 7.75 | 5.65 | | 5.75 | 5.70 | 5.55 | 6.15 | 9.80 | 10.10 | 11.45 | 11.75 | | |
| San Francisco* | 6.60 | 8.95 | 8.50 | 5.95 | | 6.80 | 6.95 | 6.90 | | | 12.15 | | | | |
| Seattle | 7.55 | | 9.10 | | | 8.05 | 6.75 | 7.95 | 9.00 | | | | | | |
| St. Louis | 7.95 | | 9.70 | 8.70 | | 8.30 | 8.65 | | | | | | | | |
| St. Paul* | 6.65 | 8.05 ² | 8.55 | 6.60 | 9.95 ⁶ | 6.50 | 6.45 | 6.45 | 8.20 | 11.30 | 11.30 | 13.20 | 13.50 | | |
| Wichita | 7.05 | 8.60 | 9.20 | 9.05 | | 6.75 | 6.65 | 6.75 | 9.05 | | | | | | |
| Winnipeg | 5.80 | 6.65 | 8.00 | 5.80 | 8.00 ⁴ | 6.13 | 6.03 | 5.80 | 6.55 | 10.05 | 10.35 | 11.70 | 12.00 | | |
| Yonkers | 5.85 | | 8.28 | | | 6.65 | | | | | | | | | |
| Youngstown | 6.16 | 6.96 | 8.31 | 6.11 | | 6.38 | 6.28 | 6.11 | 6.96 | 10.36 | 10.66 | 12.01 | 12.31 | | |

BASE QUANTITIES (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity. EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 400 to 1999 lb; (4) 6000 lb and over; (5) 1500 to 9999 lb; (6) 2000 to 5999 lb.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

| Producing Point | Basic | Foundry | Malleable | Bessemer | Low Phos. | Blast Furnace Silvery | Low Phos. Charcoal |
|-------------------------|-------|---------|-----------|----------|-----------|-----------------------|--------------------|
| Bethlehem-3 | 54.00 | 54.50 | 55.00 | 55.50 | | | |
| Birmingham-4 | 48.38 | 48.88 | | | | | |
| Birmingham-91 | 48.38 | 48.88 | | | | | |
| Birmingham-92 | 48.38 | 48.88 | | | | | |
| Buffalo-4 | 52.00 | 52.50 | 53.00 | | | | |
| Buffalo-93 | 52.00 | 52.50 | 53.00 | | | 63.75 | |
| Chicago-94 | 52.00 | 52.50 | 52.50 | 53.00 | | | |
| Cleveland-2 | 52.00 | 52.50 | 52.50 | 53.00 | 57.00 | | |
| Cleveland-4 | 52.00 | 52.50 | 52.50 | | | | |
| Deerfield, Tex.-95 | 48.00 | 48.50 | 48.50 | | | | |
| Deerfield-94 | 52.00 | 52.50 | 52.50 | 53.00 | | | |
| Eric-94 | 52.00 | 52.50 | 52.50 | 53.00 | | | |
| Everett, Mass.-96 | | 55.25 | 55.75 | | | | |
| Fontana-19 | 58.00 | 58.50 | | | | | |
| Geneva, Utah-16 | 52.00 | 52.50 | 52.50 | 53.00 | | | |
| Granite City, Ill.-102 | 53.90 | 54.40 | 54.90 | | | | |
| Hubbard, Ohio-6 | 52.00 | 52.50 | 52.50 | | | | |
| Jackson, Ohio-16 | 52.00 | 52.50 | | | | | |
| Lyle, Tenn.-101 | | | | | 62.50 | | 68.00 |
| Monsen-18 | | | | | | | |
| Neville Island-99 | 54.00 | 52.50 | 52.50 | 53.00 | | | |
| Pittsburgh-1 | 52.00 | | | 53.00 | | | |
| Sharpsville-100 | 52.00 | 52.50 | 52.50 | 53.00 | | | |
| Steelton-3 | 54.00 | 54.50 | 55.00 | 55.50 | 60.00 | | |
| Swedeland-28 | 56.00 | 56.50 | 57.00 | 57.50 | | | |
| Toledo-94 | 52.00 | 52.50 | 52.50 | 53.00 | | | |
| Troy, N. Y.-4 | 54.00 | 54.50 | 55.00 | | 60.00 | | |
| Youngstown-6 | 52.00 | 52.50 | 52.50 | 53.00 | | | |
| N. Tonawanda, N. Y.-105 | | 52.50 | 53.00 | | | | |

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct, except low phos. 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, \$2 per ton for 0.5 to 0.75 pct n ckel, \$1 for each additional 0.25 pct nickel. Subtract 30¢ per ton for phosphorus, content 0.70 pct and over. Silvery Iron: Add \$1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. \$1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferro-silicon prices are \$1 over comparable silvery iron.

REFRACTORIES

Fire Clay Brick

(F.o.b. works)
Carloads, Per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5).....\$94.60
No. 1 Ohio.....88.00
Sec. quality, Pa., Md., Ky., Mo., Ill. 88.00
No. 2 Ohio.....79.20
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50).....13.75

Silica Brick

Mt. Union, Pa., Ensley, Ala.\$94.60
Childs, Pa.99.00
Hays, Pa.100.10
Chicago District104.50
Western Utah and Calif.111.10
Super Duty, Hays, Pa., Athens, Tex., Chicago111.10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)16.50
Silica cement, net ton, bulk, Hays, Pa.18.70
Silica cement, net ton, bulk, Ensley, Ala.17.60
Silica cement, net ton, bulk, Chicago District17.60
Silica cement, net ton, bulk, Utah and Calif.24.70

Chrome Brick

Per Net Ton

Standard chemically bonded, Balt., Chester\$82.00

Magnesite Brick

Standard, Baltimore\$104.00
Chemically bonded, Baltimore....93.00

Grain Magnesite

St. %-in. grains

Domestic, f.o.b. Baltimore, in bulk fines removed.....\$62.70
Domestic, f.o.b. Chewelah, Wash., in bulk36.30
in sacks41.80

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢....\$13.00

COKE

Furnace, beehive (f.o.b. oven) Net Ton
Connellsville, Pa.\$14.50 to \$15.00
Foundry, beehive (f.o.b. oven)
Connellsville, Pa.\$17.50 to \$18.00
Foundry, oven coke
Buffalo, del'd\$26.69
Chicago, f.o.b.23.00
Detroit, f.o.b.24.00
New England, del'd24.80
Seaboard, N. J., f.o.b.22.75
Philadelphia, f.o.b.22.70
Swedeland, Pa., f.o.b.22.60
Painesville, Ohio, f.o.b.24.00
Eric, Pa., f.o.b.23.50
Cleveland, del'd25.72
Cincinnati, del'd25.06
St. Paul, f.o.b.22.50
St. Louis25.40
Birmingham, del'd21.69
Neville Island23.00

LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports) Per gross ton

Old range, bessemer.....\$8.70
Old range, nonbessemer.....8.55
Mesabi, bessemer8.45
Mesabi, nonbessemer8.30
High phosphorus8.30

After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

C-R SPRING STEEL

| F.o.b. Mill Cents Per Lb. | CARBON CONTENT | | | | |
|---------------------------|----------------|-----------|-----------|-----------|-----------|
| | 0.26-0.40 | 0.41-0.60 | 0.61-0.80 | 0.81-1.05 | 1.06-1.35 |
| Bridgeport, Conn.-58 | 5.35 | 6.80 | 7.40 | 9.35 | 11.65 |
| Carnegie, Pa.-41 | | 6.80 | 7.40 | 9.35 | 11.65 |
| Cleveland-2 | 4.65 | 6.45 | 7.40 | 9.35 | 11.65 |
| Detroit-68 | 5.60 | 6.65 | 7.25 | | |
| New Castle, Pa.-40 | 5.35 | 6.80 | 7.40 | 9.35 | |
| New Haven, Conn.-68 | 5.85 | 6.75 | 7.35 | | |
| Sharon, Pa.-13 | 5.35 | 6.80 | 7.40 | 9.35 | 11.65 |
| Weirton, W. Va.-9 | 5.35 | 6.80 | 7.40 | 9.35 | 11.65 |
| Worcester, Mass.-2 | 4.95 | 6.75 | 7.70 | 9.65 | 11.65 |
| Youngstown-48 | | 6.80 | 7.40 | 9.35 | 11.65 |

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HERE'S WHY:

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Miscellaneous Prices

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices
(Base discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Machine and Carriage Bolts

| | Pot Off List | Less Case | C. |
|--------------------------------------|--------------|-----------|----|
| 1/2 in. & smaller x 6 in. & shorter | 15 | 28 1/2 | |
| 9/16 in. & 5/8 in. x 6 in. & shorter | 18 1/2 | 30 1/2 | |
| 3/4 in. & larger x 6 in. & shorter | 17 1/2 | 29 1/2 | |
| All diam. longer than 6 in. | 14 | 27 1/2 | |
| Lag, all diam. x 6 in. & shorter | 23 | 35 | |
| Lag, all diam. longer than 6 in. | 21 | 33 | |
| Plow bolts | 34 | | |

Nuts, Hot Pressed, Cold Punched—Sq

| | Pot Off List | Less Keg (Reg.) | K. (Hvy.) | C. |
|----------------------|--------------|-----------------|-----------|--------|
| 1/2 in. & smaller | 15 | 28 1/2 | 15 | 28 1/2 |
| 9/16 in. & 5/8 in. | 12 | 25 | 6 1/2 | 21 |
| 3/4 in. to 1 1/2 in. | 9 | 23 | 1 | 16 1/2 |
| 1 1/2 in. & larger | 7 1/2 | 22 | 1 | 16 1/2 |

Nuts, Hot Pressed—Hexagon

| | | | | |
|----------------------|--------|--------|-------|--------|
| 1/2 in. & smaller | 26 | 37 | 22 | 34 |
| 9/16 in. & 5/8 in. | 16 1/2 | 29 1/2 | 6 1/2 | 21 |
| 3/4 in. to 1 1/2 in. | 12 | 25 | 2 | 17 1/2 |
| 1 1/2 in. & larger | 8 1/2 | 23 | 2 | 17 1/2 |

Nuts, Cold Punched—Hexagon

| | | | | |
|----------------------|--------|--------|--------|--------|
| 1/2 in. & smaller | 26 | 37 | 22 | 34 |
| 9/16 in. & 5/8 in. | 23 | 35 | 17 1/2 | 30 1/2 |
| 3/4 in. to 1 1/2 in. | 19 1/2 | 31 1/2 | 12 | 25 |
| 1 1/2 in. & larger | 12 | 25 | 6 1/2 | 21 |

Nuts, Semi-Finished—Hexagon

| | Reg. | Hvy. |
|----------------------|--------|--------|
| 1/2 in. & smaller | 35 | 45 |
| 9/16 in. & 5/8 in. | 29 1/2 | 40 1/2 |
| 3/4 in. to 1 1/2 in. | 24 | 36 |
| 1 1/2 in. & larger | 13 | 26 |

Light

| | | |
|----------------------|--------|--------|
| 7/16 in. & smaller | 35 | 45 |
| 1/2 in. thru 5/8 in. | 28 1/2 | 39 1/2 |
| 3/4 in. to 1 1/2 in. | 26 | 37 |

Stove Bolts

| | Pot Off List |
|---------------------------------|--------------|
| Packaged, steel, plain finished | 48—10 |
| Packaged, plated finish | 31—10 |
| Bulk, plain finish** | 62* |

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets

Base per 100 lb.

| | |
|------------------|-------|
| 1/2 in. & larger | 37.85 |
|------------------|-------|

Pot Off List

7/16 in. & smaller 36 |

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa.

Cap and Set Screws

(In bulk)

Pot Off List

Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 5/8 in. x 6 in., SAE 1020, bright 54 |

1/4 in. thru 1 in. up to & including 6 in. 43 |

1/4 in. thru 5/8 in. x 6 in. & shorter 46 |

high C double heat treat 41 |

1/4 in. thru 1 in. up to & including 6 in. 36 |

Milled studs 36 |

Flat head cap screws, listed sizes 16 |

Fillister head cap, listed sizes 34 |

Set screws, sq head, cup point, 1 in. diam and smaller x 6 in. & shorter 53 |

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads 21.60 |

Ton lots 23.75 |

Less ton lots 25.25 |

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads 27.75 |

Ton lots 30.05 |

Less ton lots 31.85 |

ELECTRODES

Cents per lb., f.o.b. plant threaded electrodes with nipples, undozed

| Diam. in in. | Length in in. | Cents Per lb. |
|--------------|---------------|---------------|
| GRAPHITE | | |
| 17, 18, 20 | 60, 72 | 17.85 |
| 8 to 16 | 48, 60, 72 | 17.85 |
| 7 | 48, 60 | 19.57 |
| 6 | 48, 60 | 20.95 |
| 4, 5 | 40 | 21.50 |
| 3 | 40 | 22.61 |
| 2 1/2 | 24, 30 | 23.15 |
| 2 | 24, 30 | 25.26 |
| CARBON | | |
| 40 | 100, 110 | 8.03 |
| 35 | 65, 110 | 8.03 |
| 30 | 65, 84, 110 | 8.03 |
| 24 | 72 to 104 | 8.03 |
| 20 | 84, 90 | 8.03 |
| 17 | 60, 72 | 8.03 |
| 14 | 60, 72 | 8.87 |
| 10, 12 | 60 | 8.84 |
| 8 | 60 | 9.10 |

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

Stainless-carbon Plate

No. 304, 20 pct.

Coatesville, Pa. (21)... 29.5 |

Washgtn, Pa. (39)... 29.5 |

Claymont, Del. (29)... 28.00 |

Conshohocken, Pa. (26) 27.50 |

New Castle, Ind. (55)... 26.50 |

Nickel-carbon

10 pct Coatesville (21)... 32.5 |

Inconel-carbon

10 pct Coatesville (21)... 40.5 |

Monel-carbon

10 pct Coatesville (21)... 33.5 |

No. 302 Stainless-copper

stainless, Carnegie, Pa. (60) 77.00 |

Aluminized steel sheets, hot

dip, Butler, Pa. (7)... 7.50 |

*Includes annealing and pickling, or sandblasting.

TOOL STEEL

F.o.b. mill

W Cr V Mo Co

18 4 1 — — 11.50 |

18 4 1 — — 12.10 |

18 4 2 — — 11.40 |

1.5 4 1.5 8 — 33.10 |

6 4 2 6 — 36.30 |

High-carbon chromium 63.50 |

Oil hardened manganese 64.50 |

Special carbon 22.50 |

Extra carbon 21.50 |

Regular carbon 20.50 |

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

METAL POWDERS

Per pound, f.o.b. shipping point, in lots, for minus 100 mesh.

Swedish sponge iron c.l.f.

New York, ocean bags... 7.4¢ to 9.4¢ |

Canadian sponge iron, del'd.

In East 10.00 |

Domestic sponge iron, 98+%

Fe, carload lots 15.5¢ to 17.4¢ |

Electrolytic iron, annealed,

99.5+% Fe 42.50 |

Electrolytic iron, unannealed,

minus 325 mesh, 99+% Fe 52.50 |

Hydrogen reduced iron, minus

300 mesh, 98+% Fe 63.0¢ to 80.0¢ |

Carbonyl iron, size 5 to 10

micron, 98%, 99.8+% Fe 83.0¢ to 11.4¢ |

Aluminum 21.50 |

Brass, 10 ton lots 30.00¢ to 33.25¢ |

Copper, electrolytic, 10.75¢ plus metal value

Copper, reduced 10.00¢ plus metal value |

Cadmium, 100-199 lb., .95¢ plus metal value

Chromium, electrolytic, 99%

min., and quantity, del'd. 33.50 |

Lead 7.5¢ to 12.0¢ plus metal value |

Manganese 27.75 |

Molybdenum, 99% 88.00 |

Nickel, unannealed 95.00 |

Nickel, annealed 92.00 |

Nickel, spherical, unannealed 28.50 |

Silicon 21.50 |

Solder powder 7.0¢ to 9.0¢ plus metal value |

Stainless steel, 302 22.00 |

Stainless steel, 316 21.00 |

Tin 14.00¢ plus metal value |

Tungsten, 99% (65 mesh) 23.0¢ to 28.50¢ |

Zinc, 10 ton lots 23.0¢ to 28.50¢ |

ELECTRICAL SHEETS

27 Ga. H-R cut lengths

| Fab. Mill Cents Per Lb. | Armature | Elec. | Motor | Dynamo | Transf. 72 | Transf. 65 | Transf. 58 |
|----------------------------|----------|-------|-------|--------|------------|------------|------------|
| Beech-Bottom-15 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 | |
| Brackenridge-28 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 | |
| Falansbee-53 | 6.75 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 |
| Granite City-22 | 6.75 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 |
| Ind. Harbor-3 | 7.25 | 7.75 | 9.00 | 9.80 | | | |
| Mansfield-75 | 7.05 | 7.55 | | | | | |
| Niles, O.-34 | 6.75 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 |
| Vandergriff-1 | 6.75 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 |
| Warren, O.-4 | 6.75 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 |
| Zanesville-7 | 6.75 | 7.25 | 8.50 | 9.30 | 9.85 | 10.40 | 11.10 |

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads delivered. (65-72% Cr, 2% max. Si.)

| | | | |
|--------------------------------|-------|-------------|-------|
| 0.06% C ... | 30.50 | 0.20% C ... | 29.50 |
| 0.10% C ... | 30.00 | 0.50% C ... | 29.25 |
| 0.15% C ... | 29.75 | 1.00% C ... | 29.00 |
| 2.00% C ... | | | 28.75 |
| 31-39% Cr, 4-9% C ... | | | 22.00 |
| 52-56% Cr, 4-6% C, 6-9% Si ... | | | 22.60 |

Foundry Ferrochrome

Contract prices, cents per lb of alloy. Noncontract prices add 2.50¢ per lb.

| | |
|---------------------------------------|-------|
| High carbon 8 Mesh and down. | |
| 52 to 66% Cr, 5 to 7% C, 7 to 10% Si. | |
| Carloads, bulk | 23.25 |
| Carloads, packed | 24.15 |
| Ton lots, packed | 27.25 |

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

| | |
|------------------|--------|
| 0.10% max. C ... | \$1.14 |
| 0.50% max. C ... | 1.10 |
| 9 to 11% C ... | 1.08 |

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed: lump 4-in x down bulk 2-in x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.

Bulk 1-in x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, dump, delivered.

| | |
|-------------------------------------|-------|
| 30-33% Ca, 60-65% Si, 3.00% max. Fe | |
| Carloads | 19.00 |
| Ton lots | 22.10 |
| Less ton lots | 23.60 |

Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy lump, delivered.

| | |
|----------------------------------|-------|
| 16-20% Ca, 14-18% Mn, 52-59% Si. | |
| Carloads | 20.00 |
| Ton lots | 22.30 |
| Less ton lots | 23.30 |

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 32-42% Cr, 17-19% Si, 8-11% Mn.

| | |
|---------------|--------|
| Ton lots | 16.50¢ |
| Less ton lots | 17.75¢ |

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

| | |
|----------------------------|--------|
| Carload packed | 18.00¢ |
| Ton lots to carload packed | 19.00¢ |
| Less ton lots | 20.50¢ |

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, 1/2 lb x 12 mesh.

| | |
|---------------|-------|
| Ton lots | 17.50 |
| Less ton lots | 19.50 |

HALLDEN

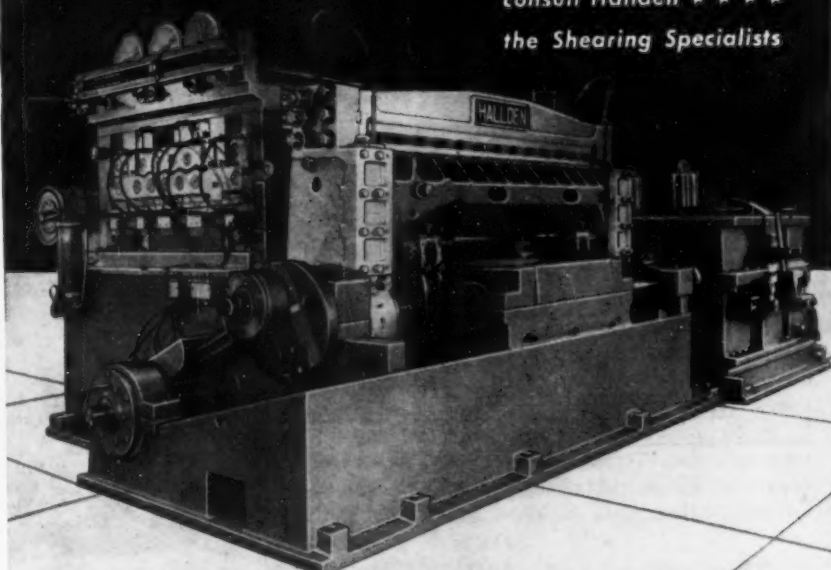
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W. H. A. Robertson & Co., Ltd., Bedford, England

September 20, 1951

169

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- Designed like a bridge for structural dependability
- Quarter round safety curbs
- Exclusive, built-in hand holds



Magcoa Dockboards made of magnesium, can be handled by one man without the aid of truck, chain or hoist. They're easier to approach and drive onto . . . rounded and tapered ends of safety curbs offer maximum turning radius. Magcoa Dockboards are built like a bridge with reinforcing floor members and all-welded construction.

They offer maximum safety and strength with minimum weight . . . in any size and any capacity to suit your special needs.

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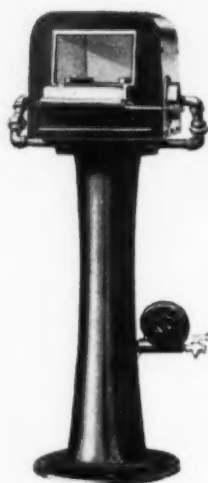
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Ferroalloy Prices

Ferromanganese

75-82% Mn. maximum contract base price, gross ton, lump size.
F.o.b. Niagara Falls, Alloy, W. Va. \$185
Welland, Ont., Ashtabula, O. \$187
F.o.b. Johnstown, Pa. \$185
F.o.b. Sheridan, Pa. \$185
F.o.b. Etina, Clairton, Pa. \$185
\$2.00 for each 1% above 82% Mn. penalty, \$2.15 for each 1% below 78%
Briquets—Cents per pound of briquet delivered, 66% contained Mn.
Carload, bulk 10.95
Ton lots 12.55

Spiegeleisen

Contract prices gross ton, lump, f.o.b.
16-19% Mn 19-21% Mn
3% max. Si 3% max. Si
Palmerton, Pa. \$74.00 \$75.00
Pgh. or Chicago 75.00 76.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.
96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed \$4.75
Ton lots \$6.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
Carloads 24
Ton lots 26
Less ton lots 22

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb. of contained Mn 19.15

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.
Cast Turnings Distilled
Ton lots \$2.05 \$2.95 \$3.75
Less ton lots 2.40 3.30 4.55

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.
Carload bulk 9.90
Ton lots 11.50
Briquet, contract basis carlots, bulk delivered, per lb of briquet 11.15
Ton lots 13.75

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$92.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$90.00. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.
96% Si, 2% Fe \$1.70
97% Si, 1% Fe \$2.10

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.
Carload, bulk 8.95
Ton lots 8.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.
25% Si 20.00 75% Si 14.00
50% Si 12.40 85% Si 15.55
90-95% Si 17.50

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd, Mn 85-90%.
Carloads Ton Less
0.7% max. C, 0.06% P, 90% Mn 26.25 23.10 23.30
0.07% max. C 25.75 27.00 28.20
0.15% max. C 25.25 27.10 28.30
0.30% max. C 24.75 26.00 27.20
0.50% max. C 24.25 26.10 27.30
0.75% max. C 23.75 26.10 27.30
7.00% max. Si 21.25 23.10 24.30

Ferroalloy Prices

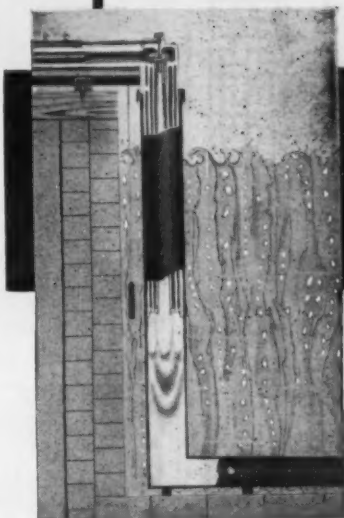
| | |
|--|---------------|
| Alsilfer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y. | 9.90¢ |
| Carload | 11.30¢ |
| Ton lots | |
| Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo. | \$1.16 |
| Ferrocolumbium, 50-60%, 2 in. x D, contract basis, delivered, per pound contained Cb. | \$4.90 |
| Ton lots | 4.95 |
| Less ton lots | |
| Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta | \$3.75 |
| Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo. | \$1.32 |
| Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton | \$65.00 |
| 10 tons to less carload | 75.00 |
| Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti | \$1.35 |
| Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti | \$1.50 |
| Less ton lots | 1.55 |
| Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton | \$177.00 |
| Ferrotungsten, standard, lump or 1/4 x down, packed, per pound contained W, 5 ton lots, delivered | \$5.00 |
| Ferrovandium, 35-55%, contract basis, delivered, per pound, contained V. | |
| Openhearth | \$3.00-\$3.10 |
| Crucible | 3.10-3.20 |
| High speed steel (Primos) | 3.20-3.25 |
| Molybde oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. | \$1.14 |
| bags, f.o.b. Washington, Pa., Langeloth, Pa. | \$1.13 |
| Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound | |
| Carload, bulk lump | 14.50¢ |
| Ton lots, bulk lump | 15.75¢ |
| Less ton lots, lump | 16.25¢ |
| Vanadium pentoxide, 86-89% V ₂ O ₅ contract basis, per pound contained V ₂ O ₅ | \$1.28 |
| Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy. | |
| Ton lots | 21.00¢ |
| Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy. | |
| Carload, bulk | 7.00¢ |
| Boron Agents | |
| Contract prices per lb of alloy, del. Borasil, f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B | \$5.25 |
| Bortam, f.o.b. Niagara Falls | |
| Ton lots, per pound | 45¢ |
| Less ton lots, per pound | 50¢ |
| Carbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed. | |
| Ton lots, per pound | 10.00¢ |
| Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots | \$1.20 |
| F.o.b. Wash., Pa.; 100 lb up | |
| 10 to 14% B | .85 |
| 14 to 19% B | 1.20 |
| 19% min. B | 1.50 |
| Orainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over. | |
| No. 1 | \$1.00 |
| No. 5 | 65¢ |
| No. 75 | 50¢ |
| Manganese-Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 1.00% max. C, 2 in. x D, del'd | |
| Ton lots | \$1.46 |
| Less ton lots | 1.57 |
| Nickel-Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 2.00% max. Fe, balance Ni, delivered. | |
| Less ton lots | \$1.80 |
| Silica, contract basis, delivered. | |
| Ton lots | 45.00¢ |

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For Concrete Reinforcing Steel

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immediately—others—well,
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take a little time.

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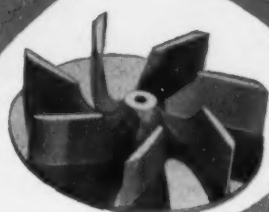
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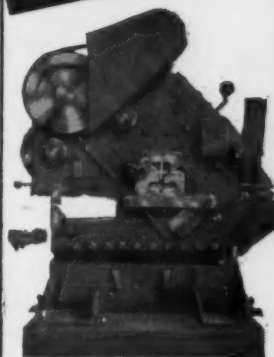
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CONSTRUCTION

WORMSER

Model T-15; T-25



Model T-25 Machine

— SPECIFICATIONS —

| | Model T-15 | Model T-25 |
|-------------|----------------|----------------|
| to Punch | 7/8" x 7/16" | 1" x 9/16" |
| to Shear | | |
| Plates | 7/16" | 1/2" |
| Flat Bars | 3" x 9/16" | 3-3/16" x 5/8" |
| Tees | 3-1/8" x 5/16" | 4" x 3/8" |
| Angles | 3-1/8" x 5/16" | 4" x 3/8" |
| Round Bars | 1-3/16" | 1-3/8" |
| Square Bars | 1" | 1-1/4" |

Available in Triple Combination Vertical and Horizontal
Punches and Shears—also individual machines.

MOREY MACHINERY CO., Inc.

410 Broome St., New York 13, N. Y. • Canal 6-7400

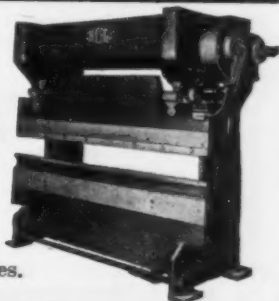
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STEEL PRESS BRAKES

43 Standard Sizes

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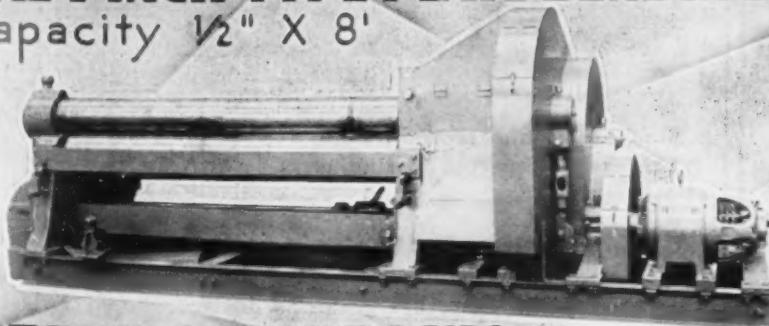
DREIS & KRUMP
MANUFACTURING COMPANY



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INITIAL PINCH TYPE PLATE BENDING ROLL

Capacity 1/2" X 8'



Our Line
Light and heavy
machinery for all
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structural work

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CONSIDER GOOD USED EQUIPMENT FIRST

AIR COMPRESSORS

2873 cu. ft. Worthington 29 x 21" & 18 1/2 x 21". Complete with Elec. Equipment
1480 cu. ft. Worthington 23" x 14 x 16". With 300 H.P. Syn Motor 4160/3/60

CRANES—OVERHEAD ELECTRIC TRAVELING

10 ton Case 100' Span 220/3/60. With two 5 ton trolleys

CRANE—ROUSTABOUT

Hughes Keenan Roustabout Crane Model MC-4 25' Gooseneck Boom, Mounted on Tractor. Equipped with pneumatic tires

CRANE—LOCOMOTIVE

Industrial Brownhoist Type B Steam Locomotive Crane, 50' Boom. New Boiler installed 1946

CRANE TROLLEY

40 Ton Shaw-Box Trolley, Equipped with 15 H.P. G.E. Motor. Gauge of Trolley 7'6", Lift 80'. New 1942

FLANGING MACHINE

No. 3 Blue Valley Flanging Machine. Will flange flat heads from 48" to 10' or 12' dia. Silent chain drive with A.C. Motor. Equipped with air cylinder and hydraulic pump

FORGING MACHINE

2" AJAX Upsetting and Forging Machine—New 1941. Equipped with Air Clutch

FURNACE—MELTING

400 lb. Moore Type "UT" Melting Furnace Top Charge, Complete with Transformer. New 1943—Little Used

15 ton Heroult Model V-12 Electric Melting Furnace, Top Charge hydraulically operated, Complete with Transformer Equipment

GRINDER

No. 72 Hanchett Vertical Surface Grinder Three Spindle 72" Rotary Table with Electrical Equipment

KEYSEATER

No. 6 Giant Vertical Keyseater Complete with Electrical Equipment

LATHE—TURRET

Gisholt Model 2L Turret Lathe, Motor Driven 15" Dia. 3 Jaw Universal Chuck, 4" Hole in Spindle. NEW 1942 or Later.

MOTOR

750 H.P. G.E. Synchronous Motor 2300/3/60 450 RPM Slightly Used

PLANERS

48 x 48" x 18' Cincinnati, Four Head
48 x 48" x 12' Niles-Bement-Pond, Four Head
60 x 60" x 12' Niles-Bement-Pond, Four Head
120 x 72" x 19' Betts, Four Head

PLANER—OPEN SIDE

60 x 60" x 18' Detrick & Harvey Three Head

PRESS—HYDRAULIC FORGING

1000 Ton United Steam Hydraulic Forging Press Quick Acting, Stroke (Daylight) 4". Distance Between Columns 31". Rot. 72" Intensifier and Accumulator Included, also 8000 lb. Alliance Straight Line Manipulator. NEW 1942

ROLLING MILL

23" x 60" Mackintosh Hemphill Three High Breakdown Mill, Cast Steel Housings, Motor Driven Screw Downs, Complete with Pinion Stand, etc.

SHEAR—ROTARY

#40A Quickwork, 1/2" Capacity, Circle Cutting Attachment & Elec. Equip. Included

TESTING MACHINES

10,000# Olsen Universal Wire Testing Machine
20,000# Southwark SIOC Universal Hydr. Testing Machine

120,000 lb. SOUTHWARK-TATE-EMERY Universal Hydraulic Testing Machine. LATE
300,000 lb. SOUTHWARK-EMERY Universal Hydraulic Testing Machine

WELDERS

700 KVA Federal Flash Welder, Enclosed Rim Type, 440 Volt, Single Phase, Ring Sizes 6" to 35" Diameter x 12" Wide
40 KVA Sclaky Spot Welder, 36" Throat 440/3/60 operation

RITTERBUSH & COMPANY INC.

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Phone—Cort 7-3437

The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

Reconditioning—The aircraft industry is in the grip of galloping expansion (THE IRON AGE, Sept. 13, 1951, p. 216). A New York dealer reports that aircraft demand is still the hottest thing circulating but requirements in many cases are difficult to fill.

Last week Curtiss-Wright Corp. president Roy T. Hurley described the industry's proposed sudden and huge expansion. He indicated that the firm had reconditioned 2000 used machine tools and had purchased 500 new ones from foreign sources.

Stress on Rebuilt—Some in the used machinery field are saying that buyers are seeking more rebuilt machines than before. Reasoning runs: Before, some manufacturers were merely preparing for defense contracts on the way. They had the time to put their own machinists and shops on reconditioning chores. Now defense contracts are here for more firms and these no longer have the time to rebuild or recondition. They must get machines that are already rebuilt.

Defense producers can be expected to continue on the fringe of rebuilding work. They may have special production problems that necessitate changes on used machines.

Still Dozing—The New York market has still not shaken off its summer doze. Aircraft inquiries continue strong and hard to fill but, otherwise, demand is for a wider variety of equipment. Stress is still on late model types.

Rebuilding and reconditioning in this area is reported continuing at a fast clip.

Copper Worries—NISA members are worrying more seriously about the copper shortage. Supplies were far from adequate before the copper strike. The short-

age is expected to intensify when the effects of the strike loss of copper hit a little later.

Preaches Renewal—Machinery and Allied Products Institute, 120 S. LaSalle St., Chicago 3, Ill., has published a 70-page manual on machinery replacement policy. It is aimed at machinery users, sellers, and schools. It helps management answer an important question: "What is it costing you to operate economically dead equipment?"

MAPI literature heralding the book preaches that machine renewal when necessary is an important cost and efficiency factor. MAPI points out that a machine need not be junk to warrant its being given the heave-ho from a plant. If it no longer meets the requirements of that industry's production, it should be replaced.

Perhaps, used machinery dealers should pass a few copies of the book along to their customers.

Revival?—Used machinery dealers have been reassuring each other that slow business will revive drastically, being carried along on the rising defense contract tide. There's nothing wrong with that statement. Whether defense will yield any immediate relief can be debated, though.

Business in the used field will depend on how many and how quickly subcontracts filter down to smaller plants. Right now the volume of defense subcontracts is increasing but the jump is not yet startling. Buyers are still fussy. Late type machines are scarce.

A substantial flow of subcontracts to small business is the gimmick that will loosen purses and encourage the sale of a great many used machines of older vintage. This is the business that dealers should be looking for—but it may not arrive in appreciable volume until 1952.

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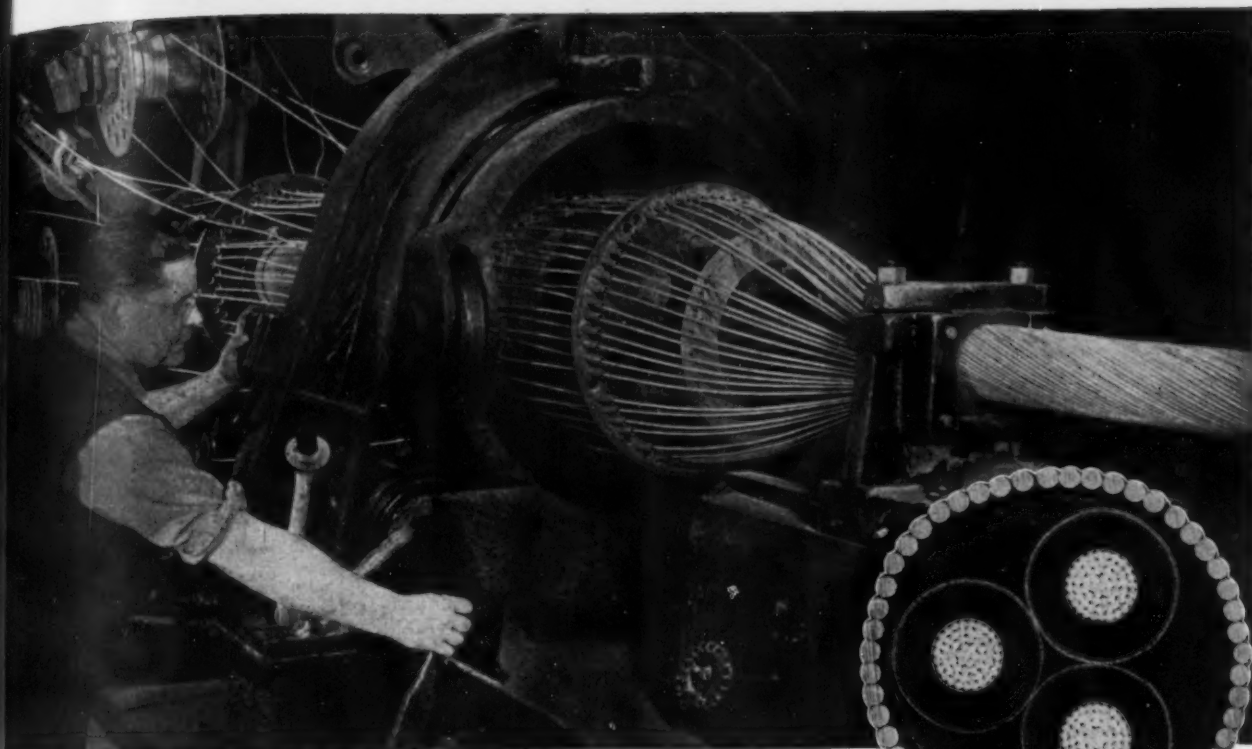
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AGE



ARMORING MACHINE—The 39,200-ft cable gets its wrap of protective steel as 52 bethanized wires are wound helically in a continuous operation. As each reel of armor wire is used up, the end of the No. 4 gage wire is welded to the end of another length. Nearly 400 miles of armor wire, weighing 177 tons, was required.

BETHANIZED WIRE Armors Largest High-Voltage Submarine Cable

A 25,000-volt power cable, the largest of its kind ever made, was lowered to the bottom of Puget Sound early in May. Capable of transmitting 27,000 hp, it will feed Bonneville electric power to the San Juan island group. Engineered and made in one 7½-mile length by The Okonite Company for the

Bonneville Power Administration, the 4.6-in. diameter cable has an armor made up of 52 bethanized steel wires.

The helically wound steel wire greatly strengthens the cable, takes up the stresses incurred in handling, and protects it against damage when submerged.



HUGE RAIL SHIPMENT—Probably the largest item of railroad freight ever handled in one piece, the 375 tons of cable posed quite a shipping problem because of its 7½-mile length. A length of about 4400 ft was coiled in each of the nine gondolas, then the cable was looped over into the next car.

Photos courtesy The Okonite Co., Passaic, N. J.

BETHLEHEM WIRE

INSIDE STORY—The giant power cable, 4.6 in. in diameter, has an outer armor of 52 bethanized wires, each about ¼ in. in diameter. Each of the three stranded copper conductors is insulated with rubber insulation and clad with a metal shielding tape. Spaces between conductors are filled with jute and bound with heavy tape prior to the armoring operation.

The high corrosion-resistance and ductility of the bethanized coating make bethanized wire ideal for a wide variety of uses, especially where long coating life is needed. In the bethanizing process, 99-pct-pure zinc is deposited atom by atom in a uniform, tightly bonded jacket. Twist it, bend it, even draw it through dies—the ductile zinc refuses to crack, flake, or peel off. It's a coating that can take a lot of punishment.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

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September 27, 1951